339
D5
906
Copy 1

THE INVENTORS Universal EDUCATOR

F. G. DIEFENBACH, M.E.

Class T 339
Book .D5
Copyright No. 1906

COPYRIGHT DEPOSIT.

THE

INVENTOR'S UNIVERSAL EDUCATOR.

AN EDUCATIONAL CYCLOPAEDIA

AND GUIDE

FOR INVENTORS, PATENTEES, MANUFACTURERS, MECHANICS AND ALL OTHERS CONNECTED DIRECTLY OR INDIRECTLY WITH

PATENTS.

COMPILED AND PUBLISHED BY

FRED G. DIETERICH,

SOLICITOR OF PATENTS, MECHANICAL EXPERT,

WASHINGTON, D. C.

COPYRIGHT 1899-1906.

1

LIBRARY of CONGRESS
Two Copies Received
DEC 28 1906
Copyright Entry
Dec. 28, 1906
CLASS A XXc. No.
16140
COPY B

T339
.D5
1906

FRED G. DIETERICH & CO.,

PATENTS AND PATENT CAUSES,

ALBERT E. DIETERICH,
FORMERLY
ASSISTANT EXAMINER U. S. PATENT OFFICE.

ATTORNEY AT LAW
PRACTICING BEFORE PATENT AND DISTRICT OF COLUMBIA BAR.

OURAY BUILDING, OPPOSITE U. S. PATENT OFFICE,
WASHINGTON, D. C.

FRED G. DIETERICH,
PATENT ATTORNEY
AND
MECHANICAL EXPERT.

U. S. and Foreign Patents Procured. Validity Reports. Infringement Suits. Experting. Thirty Years Actual Experience.

Write for Guide Books—How to Proceed, Requirements, Etc.

YOURS FOR "NEW IDEAS"

FRED G. DIETERICH.

A WORD WITH YOU

In presenting this work to Inventors, Manufacturers, Mechanics, and others directly or indirectly interested in Patents, the author has in view the presentation of information concerning the lawful requirements relating to patents; what may or may not be patented; the proper steps to take to secure protection for new ideas, and with special information how best select *a proper attorney* to represent the inventor before the U. S. Patent Office,—it also having information relating to the many technical requirements that will so educate anyone contemplating the procuring of a patent or becoming interested in a patented invention, that he can proceed more intelligently, with greater safety, and with much more positive assurance of having his business attended to faithfully and with greater dispatch and honesty, than would likely be the case where the inventor must depend entirely on the advice of others, among them a certain class of Patent Agents, Brokers and others, whose advice is framed and submitted, too often with misleading language, having for its purpose the landing of a fee and encircling the would-be inventor with a labyrinth of circumstances, which, Octapus-like, often draws his financial all and frequently leaves him either with a valueless return and often nothing but a sad experience, which so disappoints and disgusts him with the Patent System as to turn him from a channel, *which properly fostered*, might have lead him into a line for which nature may have specially endowed him, and from a future financial success.

A continuous experience in this city as a successful practitioner before the Patent Office Department, extending over a period of 25 years, enjoying the acquaintance and friendship of nearly all of the best and well known Attorneys, Counsellors, and Solicitors in this city, as also a large number of the Officials and Examiners in the Patent Office Department, has kept me closely in touch with the many changes relating to the Patent Office Requirements and Rules of Practice, and also those made in the methods adopted by many Solicitors and Patent Firms, who within the last five years have entered the field of the Patent Profession.

Numerous Patent Solicitors have published pamphlets of more or less merit, purporting to give full information relating to Patents, *How to Secure, and How to Sell* the same after securing; but, unfortunately many of such pamphlets, while giving a general information as to the points stated, contain matter, the purpose of which is to show how the would-be inventor will make the mistake of his life to employ, "*the other fellow*" and how essential it is for him to employ the particular attorney or firm who may be publishers of the pamphlet.

Such is not the purpose of this book. While I point **with pride to an experience extending over a quarter of a century,** and while I hope to be permitted to continue in the profession for years to come, it is with pleasure that I can say, "**there are others**" to whom you can intrust your business, and "*there are many of them*," and if I can succeed in steering you in the hands of one of the "old school" who believe that HONEST ADVICE FROM THE START AND BEST SERVICE AFTERWARDS, is the leader for success, I shall feel amply rewarded.

In the compilation of this book I have endeavored to describe and arrange the text as to make the subjects touched on appear clear to every reading person and I have purposely avoided, where possible, technical terms, only clear to the expert.

The author offers this book to his co-inventors as a starting point only. He doubts not but that inaccuracies and ambiguous statements may be found, but a work of this kind must of necessity be marked by incompleteness in some of its parts.

The appendix relating to Perpetual Motion is offered as interesting matter—also to make clear, if possible, to would-be solvers, the absolute fallacy of this problem.

FRED G. DIETERICH.

U. S. PATENT OFFICE.

PATENTS.

The Constitution Provision. (The Congress shall have power * * * to promote the progress and science of useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.)

WHAT IS PATENTABLE.

A patent may be obtained by any person who has invented or discovered any new and useful improvement, art, machine, manufacture, or composition of matter, or any new and useful improvement thereof not known or used by others in this country before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application; and not in public use or on sale in the United States for more than two years prior to his application unless the same is proved to have been abandoned, upon payment of the fees required by law and other due proceedings had; provided, however, should the inventor have received Letters Patent from a Foreign Government, for which the application was made more than twelve months prior to the filing of the application in this country, no patent will be granted in this country.

WHAT IS REQUIRED TO OBTAIN A PATENT.

Before any inventor or discoverer shall receive a patent for his invention or discovery he shall make application therefor in writing to the Commissioner of Patents, and shall file in the Patent Office a written description of the same and of the manner and process of making and constructing the compound and using it in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected to make or construct and use the same, and in case of a machine he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle so as to distinguish it from other inventions, and he shall particularly point out and distinctly claim every improvement or combination which he claims as his invention or discovery. The specification and claims shall be signed by the inventor and attested by two witnesses, and when the nature of the case admits of drawings the applicant must furnish a copy of the drawings, signed by himself or his attorney and attested by two witnesses, which shall be filed in the U. S. Patent Office.

COMPOSITION OF MATTER.

When the invention or discovery is of a composition of matter, the applicant, if required by the Commissioner of Patents, must furnish specimens of the ingredients and the composition sufficient in quantity for the purpose of an experiment.

MODELS.

If required by the Commissioner of Patents the applicant must furnish a model of his invention. If such requirement is not made, a model is not necessary.

OATH.

The applicant for a patent must make oath that he believes himself to be the original and first inventor of the improvement of the art, machine, manufacture, composition, etc., for which he solicits the patent; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country, before his invention or discovery thereof, or more than two years prior to his application, or in public use or on sale in the United States for more than two years prior to his application. He must furthermore make oath that the invention has not been patented in any foreign country on an application filed by him or his legal representatives or assigns more than twelve months prior to his application in the United States, and if any foreign applications have been filed by him he must state the countries in which applications have been filed and the dates upon which they were filed.

ASSIGNEES.

Patents may be granted and issued or reissued to the assignees of the inventor or discoverer, but an assignment must first be entered of record in the Patent Office, and in case of the applicant having an assignee, in the issue of the patent the application would be made and the specifications sworn to by the inventor or discoverer.

ASSIGNMENTS.

Every invention, application or any interest therein, is assignable in law by an instrument in writing, and the patentee or his assigns or legal representatives may in like manner grant and convey an exclusive right under his patent of the whole or any specified part of the United States.

An assignment, grant, or conveyance will be void as against any subsequent purchaser or mortgagee for a valuable consideration without notice, unless it is recorded in the Patent Office within three months from the date thereof.

Every person who purchases of an inventor or discoverer or with his knowledge and consent constructs any newly invented or described machine or other patentable article prior to the application by the inventor or discoverer for a patent, or who sells or uses one so constructed, shall have the right to use and vend to others to be used the specified thing so made or purchased without liability therefor.

When any person having made a new invention or discovery for which a patent might have been granted, dies before the patent is granted the right of applying for a patent devolves on his executors or administrators in trust for the heirs at law of the deceased, in case he shall have died intestate, or if he shall have left a will disposing of the same then in trust for his devisee and in as full manner and on the same terms and conditioned as the same may have been claimed or enjoyed by him in his lifetime, and when the application is made by such legal representatives the oath or affirmation required to be made shall be so varied in form that it can be made up full.

Any person who has an interest in an invention or discovery, whether as inventor, discoverer, or assignee, for which a patent was ordered to issue upon the payment of the final fee, but who fails to make the payment of such fee within six months from the time at which it was passed and allowed, shall have a right to make an application for a patent for such invention or discovery the same as in the case of an original application, but such second or renewal application must be made within two years after the allowance of the original application.

EXAMINATION.

On the filing of an application for a patent and the payment of the fees required by law the Commissioner of Patents will cause an examination to be made of the alleged new invention or discovery ; and, if on such examination, it shall appear that the claimant is justly entitled to a patent under the law, and that the same is sufficiently useful and important, the Commissioner shall issue a patent therefor.

All applications for patents must, however, be completed and prepared for examination within one year after the filing of the petition, and in the default thereof or upon failure of the applicant to prosecute the same within one year after any action thereon, of which notice shall be duly mailed to him or his assignee, the application will be regarded as abandoned, unless it shall be shown to the satisfaction of the Commissioner that such delay was unavoidable.

MARKING PATENTED ARTICLES.

All patentees, their assigns and legal representatives, and all persons making or vending any patented article must give sufficient notice to the public that the same is patented, either by fixing thereon the word "patented" together with the day or year the patent was granted, or, when from the character of the article this cannot be done, by fixing to it or to the package wherein one or more of them is encased, a label containing a like notice, and in any suit for infringement by the party failing to so mark, no damages can be recovered by the plaintiff except he prove that the defendant was duly notified of the infringement and continued after such notice to make, use, or vend the article so patented.

Any person who, in any manner, marks or affixes on any such patented article the word "Patented" or any word of like import that the same is patented for the purpose of deceiving the public shall be liable for every such offence to a penalty of not less than $100 with costs.

CAVEATS.

Any citizen of the United States or alien who shall have resided in the United States one year next preceding the filing of his Caveat and has made oath of his intention to become a citizen, who makes any new invention or discovery and desires further time to mature the same may, on payment of the fees required by law, file in the Patent Office a Caveat setting forth the object thereof and its distinguishing characteristics, and pray protection of his right until he shall have matured his invention. Such caveat will be filed in the confidential archives of the Patent Office and be preserved in secrecy, and shall be operative for the term of one year from the time of filing thereof, and if application is made within the year by any other person for a patent with which such Caveat would, in any

manner, interfere the Commissioner shall deposit the description, specification, drawings, and model of such application in like manner in the confidential archives of the Office, and give notice thereof to the person by whom the caveat was filed. If such person desires to avail himself of his caveat he must file his description, specifications, drawings, and model within three months from the time of placing the notice in the Post Office in Washington, with the usual time required for transmitting it to the Caveator thereto, which time shall be indorsed on the notice.

REISSUES.

Whenever any patent is inoperative or invalid, by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, if the error was made by inadvertence, accident, or mistake. and without any fraudulent or deceptive intention, the Commissioner of Patents will, on the surrender of such patent and the payment of the fees required by law, cause a new patent for the same invention, and in accordance with the corrected specification, to be issued to the patentee, or, in case of his death or of an assignment of the whole or any divided part of the original patent, then to his executors, administrators, or assigns for the unexpired part of the term of the original patent.

DISCLAIMERS.

Whenever, through inadvertence, accident, or mistake, and without any fraudulent or deceptive intent, the patentee has claimed more than that of which he was the original or first inventor or discoverer, his patent shall be valid for all that part which is truly and justly his own, provided the same is a material or substantial part of the thing patented; and any such patentee, his heirs or assigns, whether of the whole or any sectional interest therein, may, on payment of the fee required by law, make disclaimer of such parts of the thing patented as he shall not choose to claim or to hold by virtue of the patent or assignment.

LABELS.

Prints and labels used in connection with articles of manufacture may be registered in the Patent Office Department.

A certificate of registration continues in force for twenty-eight years. No print or label can be registered if it has matter registrable under the trade-mark law. Registered prints and labels are assignable in writing.

TRADE-MARKS.

Any person, firm, corporation or association may obtain registration for their trade-marks. In the United States trade-marks are registered for twenty years and may be renewed from time to time for like periods upon payment of the fees required by law.

The owner of the trade-mark is entitled to its exclusive use, and any one counterfeiting or making a colorable imitation of the same makes himself liable for infringement of the trade-mark of the rightful owner. The owner of a trade-mark can proceed against infringers for damages and injunction to restrain further infringements. Whenever judgment is rendered for the plaintiff in an action for infringement of trade-mark rights, the court may assess damages for any sum above the amount of the verdict as actual damages, not to exceed three times the amount of such verdict, with costs.

A trade-mark can not be registered in the United States Patent office unless it has been used in inter-state commerce, or in commerce with a foreign nation or Indian tribes. This provision of the law is usually complied with by sending samples to a dealer in Canada or Mexico or to an Indian agent or into another State.

Whenever a trade-mark application has been found in proper form and allowable, the same is published in the Official Gazette and any person who believes he may become damaged by the registration of such trade-mark may enter opposition to the said registration within thirty days after publication.

A trade-mark is assignable in writing, and such assignment should be recorded in the Patent Office Department. Trade-marks can be registered in foreign countries having treaties with the United States.

DESIGNS.

Any person who by his own industry, genius, efforts and expense has invented and produced any new and ornamental design for a manufacture, bust, statue, alto-relievo, or bas-relief; any new and ornamental design for the printing of woolen, silk, cotton, or other fabrics; any new and ornamental impression, ornament, pattern, print or picture to be printed, painted, cast or otherwise placed on or worked into any article of manufacture; or any new, useful and ornamental shape or configuration of any article of manufacture, the same not having been known or used before his invention or production thereof, or patented or described in any printed publication, may, upon payment of the fees required by law and other due proceedings had, the same as in case of an inventor or discoverer, obtain a patent therefor. Patents for designs are granted for a term of three years and six months or for seven years or for fourteen years, as the applicant may in his application elect.

COPYRIGHTS.

Any citizen or resident of the United States who is an author, designer, or proprietor of any book, map or chart, dramatic or musical composition, engraving, cut, print or photograph or negative thereof, or a painting, drawing, chromo, statuary, models or designs may secure a copyright of twenty-eight years' duration.

To secure a copyright the title or description of the book or other article must be filed with the Librarian of Congress on or before the day of publication, and to perfect the copyright two copies of the work must be delivered to the Librarian not later than the day of publication. The usual cost for obtaining a copyright is $5, which includes the Government and attorney's fees.

FEES, AND PRICES OF PUBLICATIONS OF THE U. S. PATENT OFFICE.

On filing each original application for a patent, except design cases (first Government fee)	$15
On issuing each original patent, except in design cases (second Government fee)	20
In design cases for three years and six months	10
In design cases for seven years	15
In design cases for fourteen years	30
On filing each caveat	10
Every application for a reissue of a patent	30
On filing each disclaimer	10
On appeal for the first time from the Primary Examiner to the Examiner-in-chief	10
On every appeal from the Examiner-in-chief to the Commissioner	20
For the Official Gazette to subscribers within the United States, Mexico, and Canada—one year	5
For foreign subscribers, except in Canada and Mexico	10

All Government fees are payable in advance.

ATTORNEY'S FEES.

Attorneys' fees for preparing, filing, and prosecuting an application for a patent vary according to the character of the case. Under the head of ATTORNEYS the subject of attorneys fees is more fully touched on, and the information therein given will give the inventor an idea about what can be considered a reasonable charge for securing a patent.

THE APPLICATION FOR A PATENT IN THE PATENT OFFICE.

An application for a patent, as soon as entered in the Patent Office Department, passes into the application division where it is examined as to whether the petition, the specification, and the oath have been properly signed and the necessary fee paid.

The drawings are then forwarded to the Chief Draftsman who approves or rejects the same (see special article on drawings). If approved the drawing is returned to the application room. The case then receives its proper Serial Number and is then forwarded to the Primary Examiner in charge of the particular division to which the invention may belong; after which it is turned over to the assistant of that division, having the particular class of invention, who examines it in regular order.

Some applications are made special over others, but this is only done for particular reasons clearly defined in the Patent Office Rules of Pratice.

The examination of an application consists in a careful study of the specifications and drawings to ascertain, first, if the case is properly described and illustrated so others skilled in the art to which it may appertain can make and use the same; second, if the claims properly describe operative subject-matter; and, third, does the subject-matter disclose patentable novelty over what has already been done in the same line?

In examining the case the Examiner rejects all or such part of the invention as he may consider not patentable. As a rule, the Patent Office Examiners are experienced and expert in their particular line, but frequently, particularly so in the first action on a case, they make their rejections too sweeping and general, and very frequently the whole or portions of the claims of the inventor are rejected without giving a sufficient cause. About 90 per cent. of all patent applications filed are partly or wholly rejected on their first official action of the Examiner.

The applicant or his attorney is promptly notified of any action made by the Patent Office Department. After the case has been officially acted on and the applicant duly notified he can then proceed to amend the same and contest the Examiner's decision. Should the Examiner adhere to his decision and finally reject all or a part of the claims further action on such part of the case as has been finally rejected can be taken only by an appeal to the Board of Examiners-in-Chief.

Should the Board of Examiners-in-Chief sustain the Primary Examiner in his conclusions, an appeal can be made to the Commissioner of Patents, and should he sustain the Board of Examiners-in-Chief, the next and last step is to appeal to the Court of Appeals of the District of Columbia.

The Government cost of appealing from the Primary Examiner to the Board of Examiners-in-Chief is $10; the attorney's fee in appeals of this kind usually run from $25 to $100. The Government cost of appealing from the Board of Examiners-in-chief to the Commissioner is $20, and the attorney's fee usually from $25 to $200. The cost of appealing to the Court of Appeals of the District of Columbia, is docket fee $15; attorney's fee very high in accordance with the character of the case being appealed.

WHAT IS PATENTABLE.

First. A new combination of mechanical parts or improvements, whereby a new machine is produced, though each of the parts be separately old and well known.

Second. An improvement on any known machine, whereby such machine is rendered capable of working more beneficially.

Third. The manufacture of a new vendible substance, new or improved in itself, whether produced by a chemical or mechanical process.

Fourth. When an old manufacture is improved by some new method of working, the means of producing the improvement, whether chemical or mechanical, are in most instances patentable.

WHAT IS NOT PATENTABLE.

A patent will not be granted for a principle or a function. The mere application of an old machine to a new purpose is not patentable. The substitution of one material for another, or mechanical equivalents, are not patentable, unless a better result is obtained.

WHEN TO APPLY FOR A PATENT.

Delay in making application for Letters Patent is never advisable and may jeopardize the right of property in the same. The patent laws favor the diligent. If you have an invention that is worth patenting you can not have your papers filed too soon.

CONCEPTION OF INVENTION.

Merely conceiving the idea of an improvement or machine is not invention or discovery as against another who is first to reduce the idea to a tangible form by means of models, sketches, or other visual agency. The idea must be reduced to a practical form, either by constructing a machine or model or by such disclosure of its exact character that a mechanic or one skilled in the art to which it relates can construct the machine or improvement.

ABANDONMENT.

If an inventor allows his invention to be used freely and fully by the public, he will be deemed to have made a gift of it to them, and can not afterwards claim a patent for such invention. The question of abandonment does not depend upon the intention of the inventor. If he suffers his invention to go into public use without an immediate assertion of his rights he is not entitled to a patent. The expresssion of an intention not to take out a patent, or the mere declaration of an intention to dedicate an invention to the public, will not be regarded as an actual dedication; nor is the mere disuse of an invention evidence of abandonment. Public use for not more than two years will not debar the issuing of a valid patent.

HOW TO OBTAIN A PATENT.

The best plan to pursue is to send a drawing, sketch, or photograph of your invention to a responsible and reliable patent attorney or solicitor, together with a full description as to its workings and advantages. Do not hold back anything relating to your invention from your attorney, otherwise you need not hope to obtain the best services.

Expect to pay for the attorney's services, and do not accept as final the mere opinion of any attorney, no matter how much he may claim as to his ability. Bear in mind the inspection of a case by an attorney is one thing and the *preliminary examination report* is quite another. An opinion is based merely on what the attorney in his experience may have seen or heard of respecting devices similar to the new invention submitted to him, while the other is a report resultant of a careful search of the Patent Office records. If the attorney has but little experience his opinion is worse than worthless.

To make a search of the Patent Office records honestly and in an expert manner requires time and frequently lots of it. A fee of $5 is little enough for the most simple class of cases, while $25 or sometimes $50 would not be inadequate for services necessary to properly make the search in some of the classes of the Patent Office records.

Ordinarily in making a preliminary examination search is only made of the United States patents.

In making a preliminary examination foreign patents are, as a rule, not examined, as there is no proper classification of the same, and hence it is quite impossible to investigate them with any degree of satisfaction.

When a search is required in foreign patents the attorney's charge is always more than $5. For any alleged new invention should there be a foreign patent for substantially the same thing the said foreign patent will act as a bar to the grant of the patent in the United States.

WHAT WILL A PATENT COST.

The cost of securing patents varies materially, the same depending generally on the character of the case.

The following is the usual charge made by responsible attorneys, such charges being for what is termed an ordinary case, which is one capable of being well illustrated on one or two sheets of official drawings:

The first Government fee in all applications for a patent is..... $15

The attorney's fee, which includes the service for official drawings, specifications, and prosecuting the case before the Primary Examiner, but does not include services in appeals to the Board of Examiners-in-chief or the Commissioner, usually varies from..... $30 to $50

The second Government fee, which is alike in all applications, is..... $20

INTERFERENCE.

When two or more persons claim practically the same invention, proceedings are instituted to show priority of invention, thereby placing the case in interference.

The fact that one of the parties has already obtained a patent will not prevent an interference, for although the Commissioner has no power to cancel a patent, he may grant another patent for the same invention to a person who proves to be the first inventor.

Proceedings in interference should be conducted by competent attorneys familiar with patent law practice, as serious complicated questions arise, which, if not properly handled and argued, might work to the detriment of the inventor.

WHY PATENTS PAY.

At the close of the year 1897, upwards of 600,000 patents had been granted in the United States alone, this country leading the world in producing inventions.

Each successive year, an enormous increase of patents is recorded, new improvements are constantly added to the wealth of the country and with each new improvement a new field is opened creating a wider range for the inventor's genius.

To be sure, thousands of patents have been granted whose merits have never been tested, and no doubt many patents have caused their owners' disaster, as it will be found to be the case in any business: but as a general thing, a large proportion of patents granted are productive of handsome profits upon a very trifling financial outlay. Compare the costs of all the patents issued up to date with the known worth of a **prominent invention**. Reckoning the average cost of a patent to be $60, the amount invested would be but **$36,000,000;** whereas, among the earliest of patents issued by this government, the Sewing Machine has yielded the owners and inventors more than **$100,000,000.** These are facts which cannot be disputed.

The products of all the gold, silver and diamond mines in the world would not equal in value the annual income of American Inventors.

It is believed that there are nearly 100 Patents in the United States that yield over $1,000,000 annually; 300 yield over One-Half Million; 700 bring from $250,000 to 500,000; and 10,000 to 15,000 Patents which bring over $100,000 annuties; and thousands upon thousands of patents which yield yearly more profit to their fortunate possessors than could be saved in a life-time by a wage-earner.

There is no limit to the possible improvements in the sciences, arts and manufacturies, and it should be plain to the observer, that **A PERSON OF INVENTIVE GENIUS** cannot employ his time to better advantage than to improve upon the devices already patented and to seek to devise new methods to keep pace with the never ceasing progress of civilization.

WHAT TO INVENT FOR PROFIT.

Every capitalist, merchant, business house and manufacturer is always on the lookout for some new invention which would supercede in utility that which is already upon the market. By so doing they cannot only secure a novelty which will enable them to avoid competition and monopolize the trade in that class, but to make sales more easy, hence **MAKING THEIR BUSINESS MORE PROFITABLE.**

If they can secure for their sole use and purposes any new **electrical appliances, a railroad or engineering device, steam navigation improvement, agricultural implement, railroad supplies, household articles, novelties in hardware, puzzles, vehicles, toys, tools, designs, furniture, stable articles, or for use in surgery, medical appliances, office articles, inventions in the arts of amusements,** they would only be too willing to pay inventors handsomely for patents for such inventions.

Apply your mind to improvements in that particular line in which you are best posted, or on such articles or needs which appear the most frequently to your notice. Bear in mind, it is the **improvers** who make the most money, and that the faculty of original creation is one common to most men and women. No matter what you may see and how perfect a mechanical device, apparatus or machine may seem, always ask yourself :—

CAN THIS DEVICE BE MADE TO YIELD BETTER RESULTS THAN IT DOES NOW ?
CAN IT BE MADE TO DO ITS WORK QUICKER AND CHEAPER THAN IT DOES NOW ?
CAN ITS CONSTRUCTION BE SIMPLIFIED OR CHEAPENED ?
CAN POWER BE ECONOMIZED ?
CAN SOMETHING ELSE SIMPLER OR CHEAPER BE DEVISED FOR THE SAME PURPOSE ?

A real inventor never tires but sticks closely to his efforts, and, although failure may oft times depress and discourage him, yet, at a time when he at least expects it he will find his depressions and disappointments but a thin veil covering the rays of a **sunburst of success** that places him in the ranks of that vast army of "crank's" **who turn the machinery of prosperity and humanity, for all mankind.**

THE FIELD OF INVENTION.

That the field of invention is one of vast expanse for the exercise of individual ingenuity, is evidenced by the **Immense influence** of patented inventions in the creation of new industries of enormous magnitude operating under patents of such recent origin that among them some have not as yet expired in their term of grant.

The most noted of these new industries are those relating to **electrical inventions**, the manufacture of which has begun since 1880. The **Commissioner of Patents** in his last annual report says, in relation to these new industries: "At the end of the year 1880 there existed 76 establishments numbering 1,271 persons and producing an out-put valued at $12,665,036. In 1890 the number of employes in this line has increased to 9,485 and the value of the out-put to $91,114,714."

The increase of establishments and labor in this line of industry and the value of the out-put has been of such proportions and so rapid that to even attempt to give the exact figures is well nigh impossible; the total amount stated to be invested alone in the telephone property in 1895 being $77,500,000, and yet this new field is the result of invention so recent in its origin, that the writer remembers as but an incident of yesterday, his first experience with the telephone as a spectator at the exhibition given by Prof. Gray, at Steinway Hall, New York City, in April, 1877, when he heard the faint echo of a cornetist at Philadelphia, 90 miles distant, playing a national air.

Considering that the greatest telephone monopoly, which it is stated is capitalized for $26,000,000, and whose principle patents expired but a short time ago, is now based on substantially a single patent granted within the last 5 years, it is clearly demonstrated that there is no field so full of promise and hope of reward as that of **"invention."**

WHEELS.

So much has been said of "Wheels" that any further comment thereon seem surplusage. However, the bulk of the development of the bicycle has come since 1890 when the pneumatic tire traveled into public use and favor. In that year 27 establishments were engaged directly in the bicycle trade. In 1895 the number of establishments had so increased that the product was over **1,000,000** wheels.

THE FIELD OF INVENTION.

In 1897 the U. S. exported bicycles and bicycle sundries amounting in value **to nearly $7,000,000.**

Do not labor under the belief that the stock of inventive faculty has been exhausted. Nothing is likely to be further from the truth. While electricity and bicycle arts appear as the dominant ones at this stage, who knows but that in a few short years a "Tesla," "Edison," "Berliner," or a "Dunlop," may open up a new field in the line of invention which in due time may change what now appears to us the "ideal" methods of generating heat, power and light, and relegate such "ideals" to the bone yard of antiquities, as the present modern electric means of propulsion has driven, and as the motor cycles will soon drive the long and short eared horses from the busy thoroughfare back to their primitive duties on the farm.

True inventors are not like the poet—born that way—but are the creatures of necessity who recognizing existing circumstances, make and so shape such circumstances of life to utilize what nature in its mysterious way has already provided, to the more materially aid, comfort and provide for the necessary progress and perpetuity of the world.

In conclusion it should be stated that, notwithstanding that upwards of 600,000 patents have been granted for all improvements of ideas and discoveries, it is not within the power or judgment of any mind to set a time when the creating of inventions shall reach its zenith. So long as genius remains in the mind of man, so long will improvements on things old be made, and new discoveries and ideas constantly appear.

Cultivate that line of thought which most naturally comes before you, and after having developed an idea, device or machine, consult with **an honest, reliable patent attorney or expert** as to the possibility of your invention being new and patentable. It is not absolutely necessary (though desirable), nor is it possible to obtain a foundation or pioneer claim for an improvement on an old well-known device or machine, to make a patent, for such improvement thereon valuable. The inventor should see that he gets the best patent possible in view of the state of art in the particular line to which his invention belongs, as it apppears, **not in public** use but in the **Patent Office Department.**

U. S. CAPITOL.

PART TWO

..600..

MECHANICAL MOVEMENTS.

Relating to Pneumatics, Dynamics, Hydrostatics, Hydraulics, Steam Engineering, All Kinds of Gearing, Presses, Horology, Miscellaneous Machinery, Rotary Engines, Bicycle Gearing, Cash Register and Typewriter Movements.

ALL PLATES AND TEXT COPYRIGHTED
1899-1906.

600 MECHANICAL MOVEMENTS.

Every Mechanic, Inventor and student of the mechanical arts should study to avoid clumsiness in the construction of mechanical devices and so arrange any mechanism which he may wish to produce with the least number of parts possible.

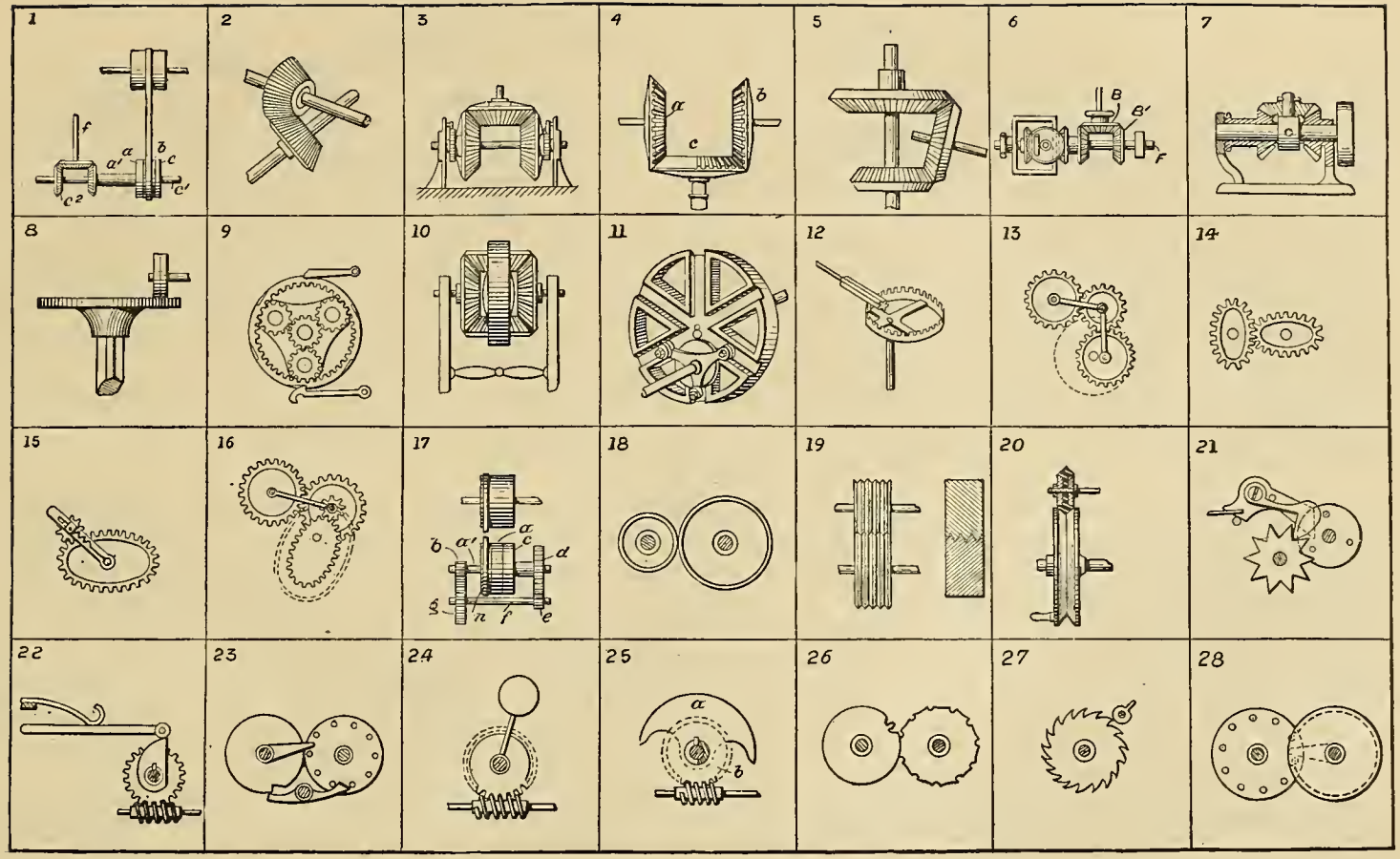
A comprehensive collection and description of **Mechanical Movements** at a cost within easy reach, is a want, long felt by inventors, mechanics and others, particularly so by inventors, who in the production of new ideas should always be careful to select, so far as possible, the simplest and best forms of mechanical movements. The lack of a proper knowledge of ordinary mechanical constructions very frequently has caused an inventor to spend considerable time and money to produce a combination of mechanisms, not only not novel, patentably, but so old as to be public property.

Than anyono may readily understand the mechanical elements most generally used in all of the different mechanical lines, the following movements have been compiled. The selection of the movements embraced in this work has been made from many sources. Most of them have appeared from time to time in different scientific journals and other publications devoted to the scientific and mechanical arts. Many of the movements, particularly those relating to bicycles, and typewriting machines, have never appeared in any former compilation.

While this collection contains more mechanical movements than has appeared in any previous publication, none of them are for obsolete or inoperative mechanisms. Owing to the large number of inaccurate illustrations which have heretofore appeared in other publications, the compiler has given particular attention to the illustrations to assure an accurate presentation of each movement.

Everyone contemplating a new invention should carefully study these movements, as he may find just such a device or mechanism as is best suited for his purpose.

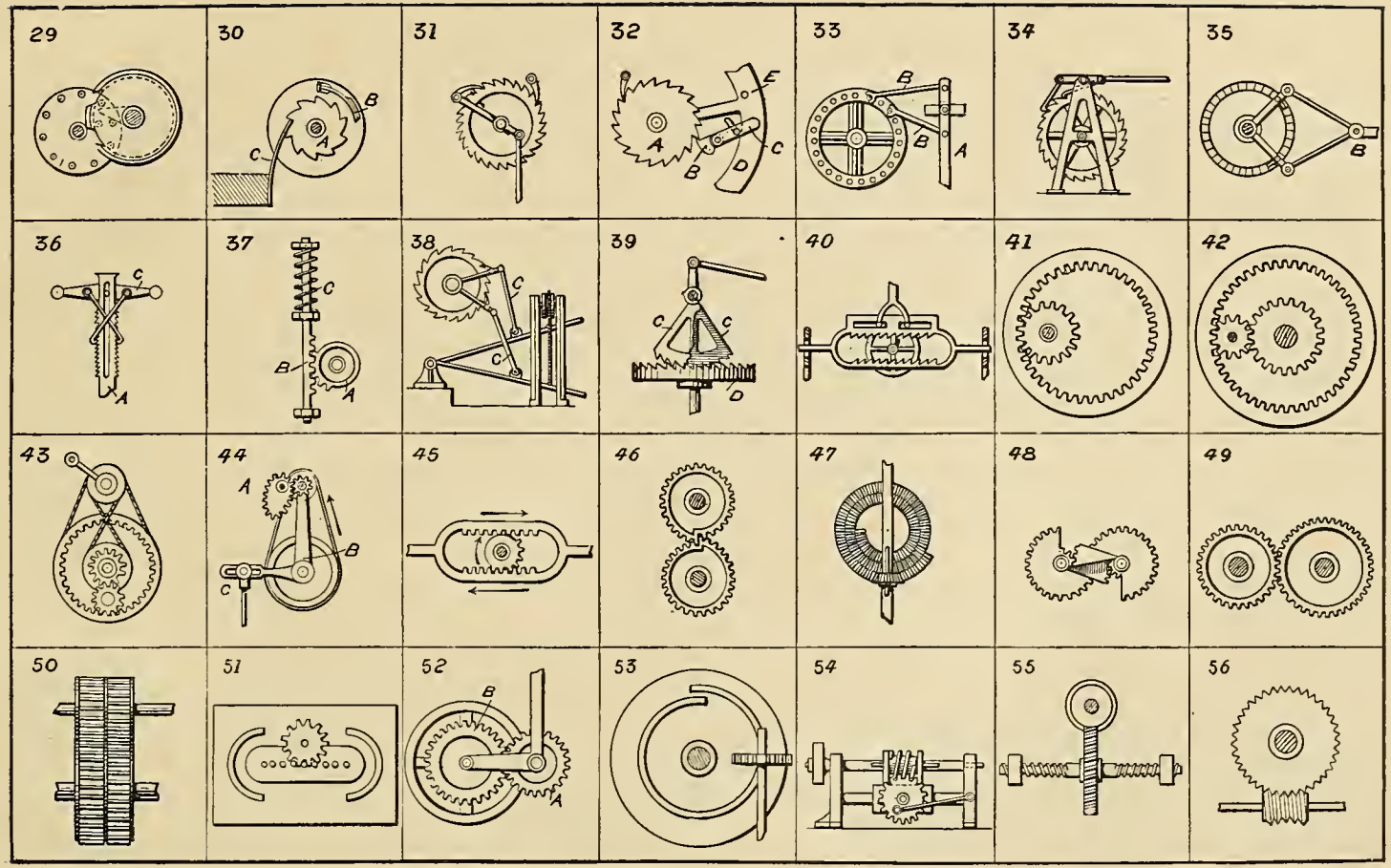
1. **Alternately Operating Gearing.**——To disengage shaft *f*, shift belt to middle pulley *b*, loose on shaft c^1. To rotate shaft to left, shift belt on pulley *a*, which carries sleeve a^1 and gear a^2. To reverse motion of shaft; shift belt onto pulley *c*, fast on shaft c^1 which carries gear c^2.....**2.—Oblique Gears**—for transmitting rotary


1
f
a
a'
b
c
c'
c2
2
3
4
a
b
c
5
6
B
B'
f
7
8
9
10
11
12
13
14
15
16
17
b
a'
a
c
d
g
n
f
e
18
19
20
21
22
23
24
25
a
b
26
27
28

motion from one shaft to another arranged obliquely thereto.....**3.—Alternately Operating Gears**—for transmitting alternate motion of single horizontal shaft to maintain a continuous rotary motion of vertical shaft. Horizontal shaft gears have oppositely arranged ratchet teeth to be engaged by the alternately operating pawls secured to horizontal shaft.....**4.—Intermittant Motion Gear**—uniform intermittant rotary motion in reverse directions is given to bevel gears *a—b*, by mutilated gear *c*.....**5.—Differential Speed Gear**—for obtaining two different speeds on same shaft from one driving wheel.....**6—Accumalative Gearing**—designed to double the speed of gears of same diameter and number of teeth. Six bevel gears are used. *b* is gear on shaft *x—b*^{1} is gear on shaft *f*,—*b*^{2} gear on hollow hub loose on shaft *f*, on which is gear *c*.—*d* is a gear carried by frame *a*, which is fixedly secured to shaft *f* to rotate therewith and carried gear *d* with it. Gear *e* is loose on shaft *f* and meshes with *d*. If the two gears *b*^{2} and *c* were removed and *d* prevented from turning on its axis, one revolution given to gear *b* would cause frame *a* to receive one revolution and as gear *d* meshes with *e* and is held from rotating one revolution of frame *a* would impart one turn to gear *e*; but if gears *c* and *b*^{2} are in place and *d* held to turn on its axis, it, the gear *d* would also secure a revolution on its axis as it moves about with frame *a* and thus produce two revolutions of gear *e* and the horizontal shaft.

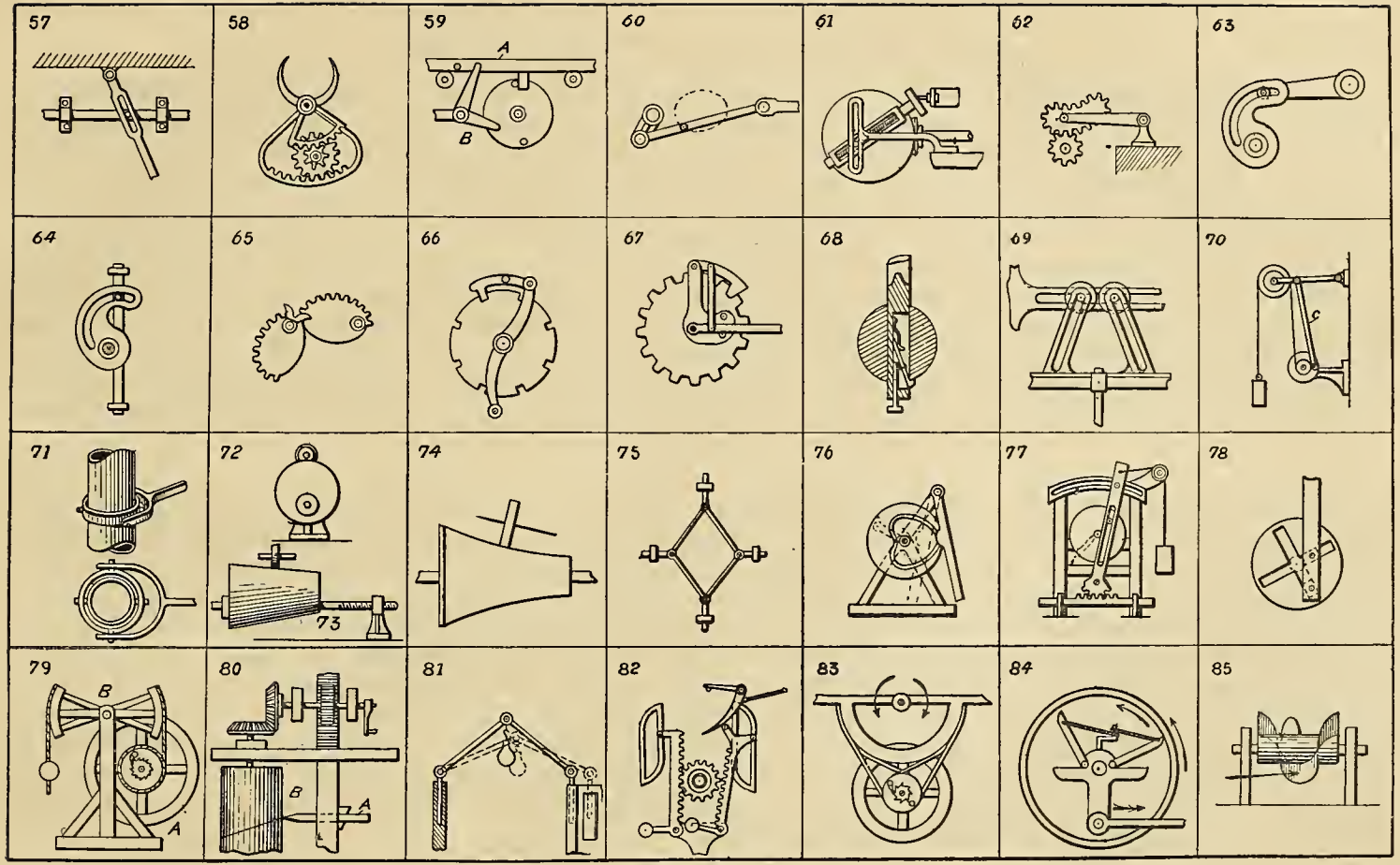
7.—Entwistle's Patent Gearing......**8.—Brush Friction Gear**—sometimes called "brush wheels"—relative speeds can be varied by moving the small wheel to or from centre of large wheel.....**9.—Capstan Base Gearing**—can be used as a simple or compound mechanism, single or triple purchase. Drum head and barrel rotate together, former fixedly held on spindle turns it and when locked to barrel turns it also, producing single purchase,—but when unlocked, wheel work acts, and drum head and barrel rotate in opposite directions, velocities as 3 to 1.....**10.—White's Dynamometer Gearing**—for determining the amount of power required to give rotary motion to any piece of mechanism.....**11.—Multiple Gearing**—the triangular wheel drives large one by the movement of its radially arranged friction rolls engaging the radial grooves in large wheel.....**12.—Pinion and Crown Eccentric Wheel Gear**—crown wheel by reason of its relative radius changes imparts variable circular motion to pinion.

13.—Eccentric and Spur Gears—producing an irregular circular motion to wheel *a*.....**14.—Elliptical Spur Gears**—for imparting rotary motion of varying speed; the variation of speed being determined by the relation between the lengths of the major and minor axes of the ellipses.


29
30
A
B
C
31
32
A
B
C
D
E
33
A
B
34
35
B
36
A
C
37
A
B
C
38
C
C
39
C
C
D
40
41
42
43
44
A
B
C
45
46
47
48
49
50
51
52
A
B
53
54
55
56

15.—**Elliptical Drive Gear**—for producing a variable rotary motion by a uniform rotary motion.....16.—**Elliptical Spur Gear**—for imparting irregular circular motion to drive wheel *a*.....17.—**Speed Gearing**—for transmitting two speeds, middle pulley *a* is fixedly held on shaft having small pinion *b*, the pulley *c* held on hollow shaft carrying large cog wheel which meshes with pinion *e* on shaft *f* carrying cog wheel *g* meshing with pinion *b*. *n* is loose pulley on shaft a^1.....18.—**Ordinary Friction Wheels**.....19.—**Grooved-bearing Friction Wheels**.....20.—**Frictional Gearing**—the small wheel has expansible (rubber) contracting surface. By compressing rubber the edges are squeezed out radially.....21.—**Jumping Gearing**—generally used for intermittent movements and revolution counters.....22.—**Another form of "Jumping" Gearing**.....23.—**Tappet Wheel Gear**.....24.—Modified form of gear shown in Fig 22.....25.—Another modification of Fig 22. Has weighted tumbler *a* used in place of spring and cam, and operates with the pin *c* on shaft of reverse gear *b*.....26.—**Simple form of "Register Wheel" Gear**.....27.—**Another form of Tappet Wheel Gear**.....29.—**Tappet Wheel Gear**.....30.—**Ratchet Gear**—the spring *b* is carried by large disk, and when it engages strong spring *c* it is pressed into mesh with the ratchet wheel *a* and rotates it.....31.—**Ratchet Gear**—for effecting an intermittent rotary motion to ratchet wheel *a* by rectilinear movement of ratchet arm *d*.....32.—**Tappet Ratchet Gear**—Tappet arm *c* is pivoted on fixed pivot. At each revolution of wheel *d*, it is struck by pin *e*, which causes tappet *b* to engage ratchet wheel *a* and turn it distance of one tooth; tappet and its arm return to vertical position by gravity.....33.—**Duplex Pawl and Ratchet Gear**—vibration of lever *c* on its fulcrum causes pawls *b*—*b* to alternately and rapidly engage wheel *a* and effect a substantially continuous rotary motion.

34.—A modification of device No. 33.....35.—**Duplex or Toggle Ratchet Gear**—rectilinear motion of rod *b* produces nearly continuous rotary movement of ratchet wheel.....36.—**Lift or Jack Pawl and Ratchet**—the rocker motion of lever *c* causes the hook pawls to alternately engage the rack faces of bar *a* and lift same.....37.—**Spring and Rack Gear**—mutilated gear *a* engages rack rod *b*, and lifts same against tension of spring *c*, which quickly forces rod down when gear and rack disengage.....38.—**Duplex Ratchet Gear**—rigid connections between pawl arms *c*—*c* and foot levers and the connection between levers, causes the arms *c*—*c* to alternately move ratchet wheel.


57
58
59
A
B
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
B
A
80
B
A
81
82
83
84
85

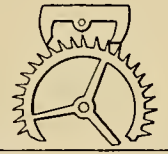
39.—**Pendulum Ratchet Gear**—nearly continuous rotary motion is imparted to ratchet wheel *d*, by the two swinging ratchet arcs *c*. Ratchet arcs have springing upward motion sufficient to allow the teeth to pass over the teeth of wheel *d*.....40.—**Double Rack Gear**—rack frame is suspended from rod *a*. Rotary cam *d* when midway of the rack faces acts on neither of them, but, when rod *a* is raised or lowered and either the upper or lower rack face is brought in path of cam, the rack frame will be moved to left or right..... 41.—**Internal Spur Gear and Pinion**.....42.—**Differential Speed Gears**.....43.—Another form Differential Speed Gears.....44.—**Irregular Acting Gear**—Irregular shaped gear *a* imparts variable vibrating action on crank *b* and pitman *c*.....45.—**Alternately Operating Gear**.....46.—**Scroll Gears**.....47.—**Spiral Gear with Sliding Pinion**.....48.—**Irregular Rotary Speed Gearing**.....49.—**Ordinary Cog Gears**.....50.—**Force Cog Gears**.....51.—**Mangle Rack**.....52.—**Sun and Planet Gear.**—Planet gear *a* travels around sun gear *b*.....53.—**Compound Rotary Motion Gear**—slow action.....54.—**Alternate Motion Gear**.....55.—**Slow Acting Worm Gear**—imparts circular into continuous but much slower rectilinear motion.....56.—**Endless Screw and Worm Gear.**

57.—**Shifting Gearing**.....58.—**Claw Operating Gearing**—each claw has a segment, the external one meshes with small pinion, the internal with large pinion, shaft *a* carries both pinions: movement thereof causes claws to come together with great force.....59.—**Gear.**—Circular motion transmits alternating rectilinear motion of slide bar *a* and bellcrank *b*.....60.—**Egg Shape Movement Gear**.....61.—Movement used in silk machinery for varying length of the traversing guide bar which guides silk on bobbins.....62.—**Caterpillar Gear**—for producing irregular vibrating motion.....63.—**Cam Gear**—for same purpose as 62.....64.—**Cam Gear**—for imparting rectilinear motion of variable speed.....65.—**Rolling Contact Gears**.....66.—**Stop Mechanism**..... 67.—Intermittent circular motion is imparted to toothed wheel by vibrating arm *b*.....68.—Sounding Weight Tripper Movement.....69.—Means for imparting alternately reciprocal motion to rollers in slotted arm.....70.—**Combination Weight Lever Movement**—pitman *c* causes arm *a* to rise and fall, thereby imparting a double movement to weight.....71.—**Gimbal Ring Joint**.....72-73.—Movement for obtaining a series of change of velocity and direction.....74.—**Variable Motion from Cone surfaces.**

85a

86

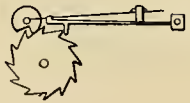
87



88

89

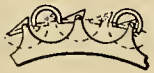
90



91

92

93



94

95

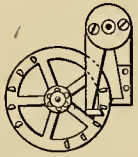
96

97

98

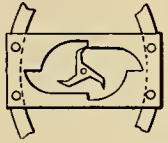
99

100

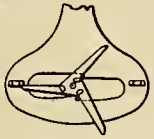


101

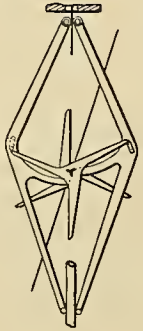
102



103



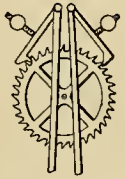
109



110

104

105

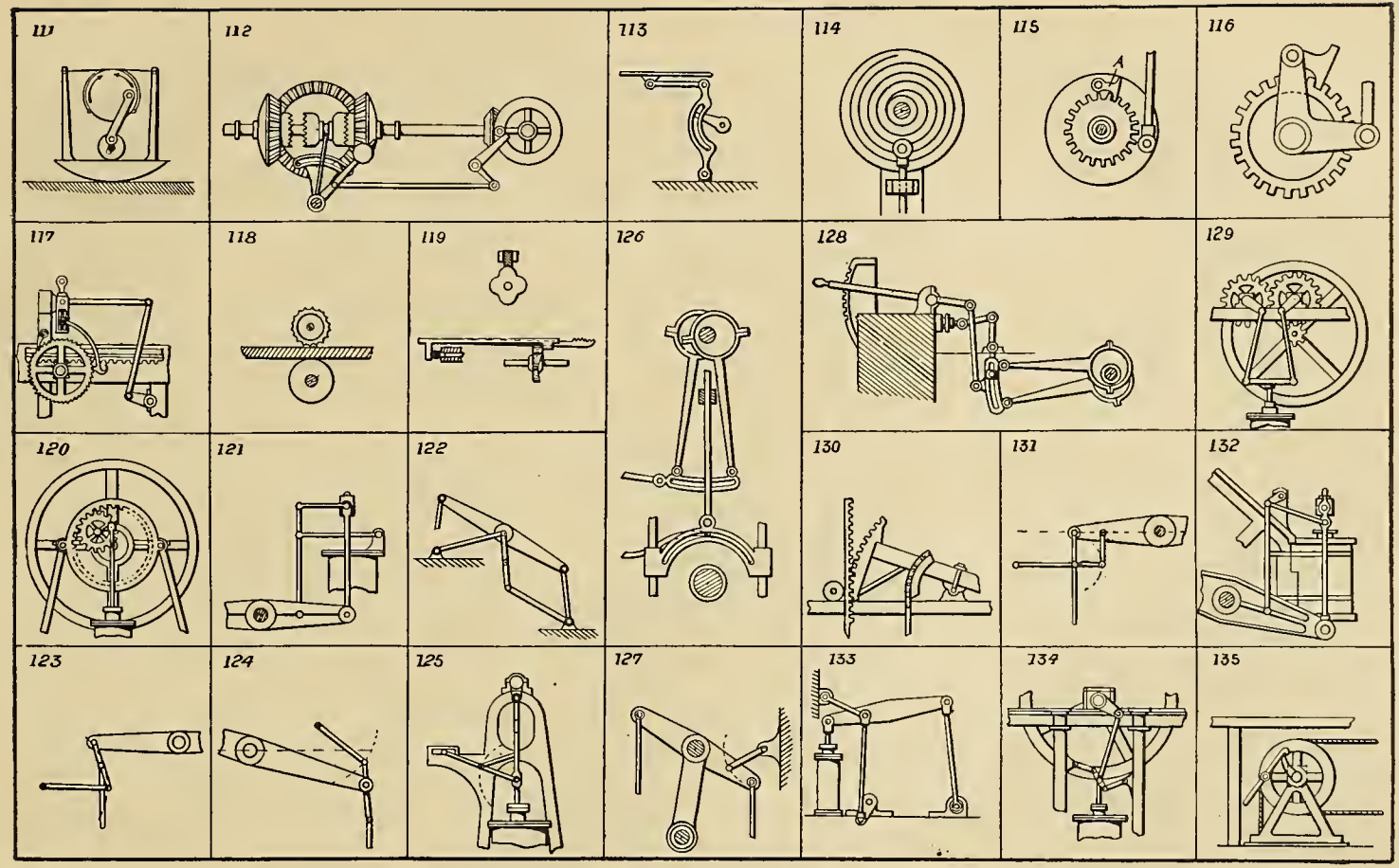


106

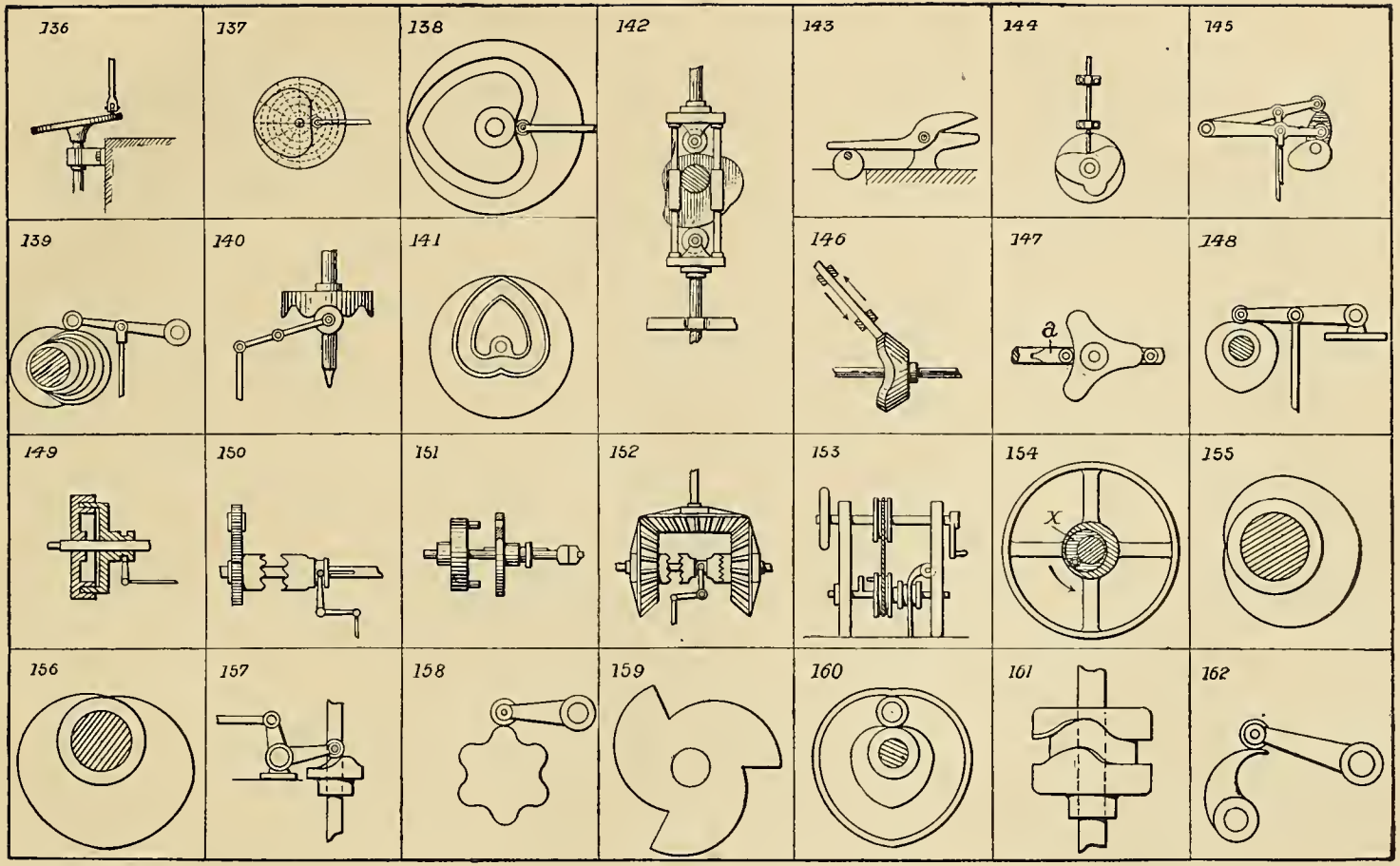
107

108

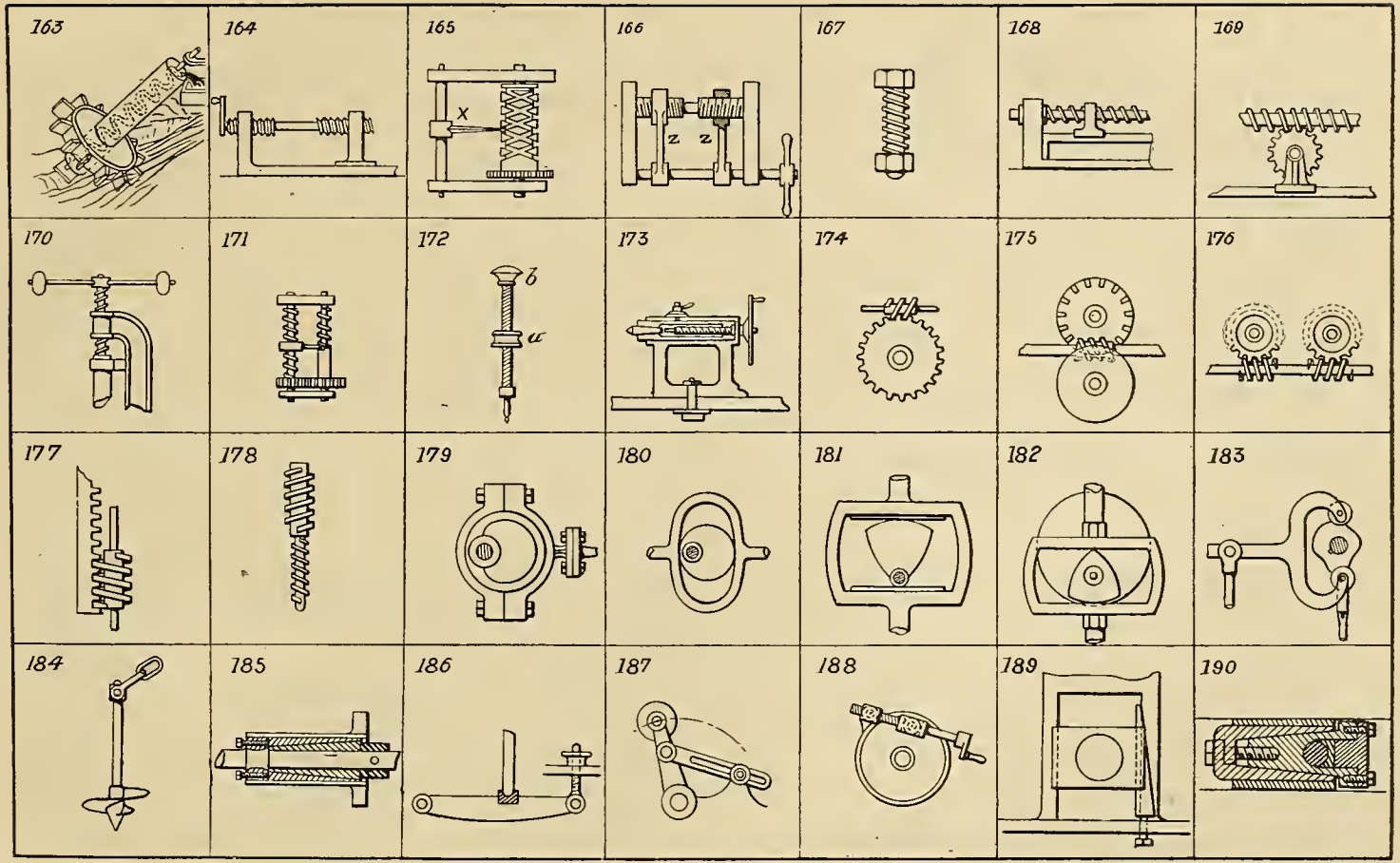
75.—**Toggle Motion**—imparts rectilinear motion from rectilinear motion.....76.—**Cam Disk**—imparts vibratory from rotary motion.....77.—Means for imparting alternate rectilinear motions from rotary motion.....78.—Means for obtaining two reciprocal movements by one revolution of disk.....79.—Continuous rotary motion of wheel *a* from oscillating lever *b*.....80.—Means for describing spiral line on cylinder. Stylus *a* rises as cylinder *b* rotates.....81.—**Door Closing Device**.....82.—Intermittently operating gearing for transmitting continuous rotary motion from alternately operating swinging racks.....83.—Means for converting oscillating into rotary motion.....84.—Device for converting oscillating motion into intermittent circular motion in either direction..... 85.—**Air or Water Wheel**—to convert air or stream force into rotary motion.....85½.—**Verge Escapement**..... 86.—**Escapement**—*d* is escapement wheel and *b* and *c* the pallets having axis *a*.....87.-88.—**Recoil and Repose Escapements**....89.—**Pendulum Escapement**....90.—One form of Watch Chronometer or free escapement.... 91.—**Duplex Escapement for Watches**....92.-93.—Two views of a cylinder escapement....94.—**Lever Escapement** 95.—**Lateral Wheel Escapement**....96.—**Old Fashioned Clock Escapement**....97.—**Clock or Watch Escapement**.... 98.—**Balance-wheel Escapement**....99.—**Dead Beat Pendulum Escapement**....100.—**Pin Wheel Escapement**.... 101.—**Single Pin Pendulum Escapement**.....102.—**Three Legged Pendulum Escapement**.....103.—Modified arrangement of 102.....104.—**Detachable Pendulum Escapement**.....105.-106.—**Gravity Escapement**.....107.—**Common Chronometer Escapement**.....108.—**Lever Chronometer Escapement**.....109.—**Duplex Three-legged Gravity Escapement**.....110.—Another form of Gravity Escapement.....111.—**Rocker or Cradle Movement**..... 112.—Automatically operating **Reversing Gear**.....113.—**Sewing Machine Shuttle Driving Gear**.....114.—**Spiral Feed Gear**.....115.—**Reversible Rectilinear Motion**—for producing intermittent rotary motion. Motion is reversed by throwing over check pawl *a*.....116.—Planing Machine **Feed Motion**.....117.—Means for imparting reciprocal motion to sawing machine bed, or printing machine platen.....118.—Simple feed motion for Planing Machine.....119.—Wheeler & Wilson's sewing machine feed motion.....120.—Gearing for operating *b* in direct vertical line....121.—Piston rod gear for side lever Marine Engines....122.—Special **Parallel Link Motion** .....123-124.—Other forms of parallel motion.....125.—Parallel motion for direct acting engines.....126.—**Valve Motion and Reversing Gear**—common in Marine Engines.....127.—Another form of **Parallel Motion**..... 128.—Ordinary locomotive engine link motion valve gear.....129.—**Cartwright's Parallel Motion**, invented in 1787.....130.—**Simple Parallel Motion for Single-acting Beam Engine**.....131.—**Parallel Motion for Stationary Beam Engine**.....132.—Another form of parallel motion for Marine Engines.....133.—**Grasshopper Beam En-**


111
112
113
114
115
116
117
118
119
126
128
129
120
121
122
130
131
132
123
124
125
127
133
134
135

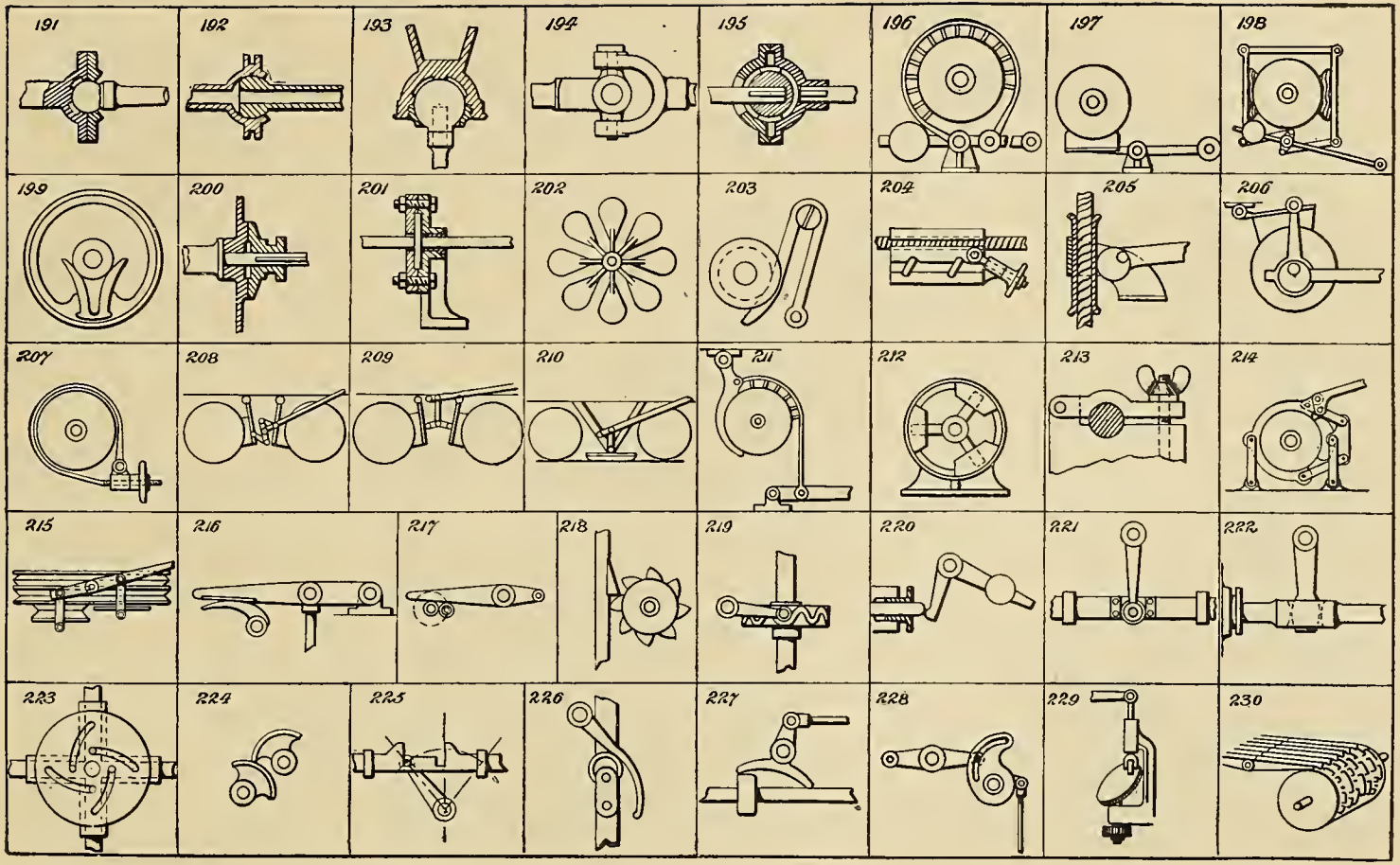
gine.....134.—Upright Engine, Parallel Motion.....135.—Pump Jack Motion.....136.—Reciprocating Rectilinear Motion.....137-138-141.—Heart Cams.....139.—Variable Cam Movement.....140.—Wave Motion Cam .....142.—Lift Cam Motion.....143.—Plate Cutting Shears .....144.—Trinial Face Cam.....145.—Duplex Alternately Operating Cams.....146.—Bevel Disk Cam.....147.—Continuous rotary motion of cam gives a reciprocating rectilinear motion to the bar *a*.....148-155-156.—Other forms of Heart Cam .....149.—Friction Clutch—Common form.....150.—Clutch Gear.....151.—Another form of Sliding Clutch.....152.—Triple Gear and Sliding Clutch.....153.—Simple Pulley Clutch Means.....154.—Ball Clutch—When axle turns in direction of arrow ball locks wheel with axle; when axle turns opposite way, ball runs free in space *x*.....155.—Crown Cam—for vertical shaft.....157-158.—Jumping Cams.....160.—Covered Heart Cam.....161.—Covered Crown Cam.....162.—Wiper Cam.....163.—Archimedes' Screw—for raising water.....164.—Different screw pitches on shaft causes bearing *a* to move to and fro as shaft is rotated.....165.—Reverse Thread Cylinder—When rotated imparts reverse movement of finger *x* from end to end.....166.—Right or left screw shaft separates or draws together travelers *z*.....167.—Common Screw, Bolt and Nut.....168.—Simple Rotary Screw Motion.....169.—Screw Cutting and Slide Lathe Screw Gear.....170.—Stamp Press Screw.....171.—Another form of screw feed motion.....172.—Persian Drill Motion—Shank has quick thread, holding nut *a* steady and moving head *b* up or down causes quick rotation of drill in opposite direction.....173.—Turning Lathe, Movable Head.....174.—Superior form of Worm Gear.....175.—Worm Gearing.....176.—Modified form of said Gearing.....177.—Vertical Rack and Worm Gear.....178.—Micrometer Screw.....179.—Crank Shaft Eccentric.....180.—Modification of same.....181.—Intermittently Operating Triangular Eccentric.....182.—Modification of 181. .....183.—Slide Valve Operating Eccentric.....184.—Screw Moving or Ground Anchor.....185.—Split Cone and Set-screw Adjustment.....186.—Adjustable Step Bearing for vertical Shaft.....187.—Lever Adjusting Slotted Link.....188.—Disk and Ring—For self-centring chucks.....189.—Wedge Bearing—For slide bars, guides, &c.....190.—Cross-head Adjustment.....191.—Universal Sprocket Joint.....192.—Pipe Joint..... 193.—Ball Caster Boint.....194-195.—Hook's Universal Joint.....196.—Drop Band Brake.....197.—Block and Lever Brake.....Compound Block and Lever Brake.....199.—Toggle Brake.....200.—Disk Brake.....201.—Compound Disk Brake.....202.—Fan Brake.....203.—Spring Brake.....204.—Cable Grip or Brake.....205.—Rope Brake, Cam Lever.....206.—Eccentric Action Lever Brake.....207.—Strap and Screw Brake.....208-


136
137
138
142
143
144
145
139
140
141
146
147
148
a
149
150
151
152
153
154
155
X
156
157
158
159
160
161
162

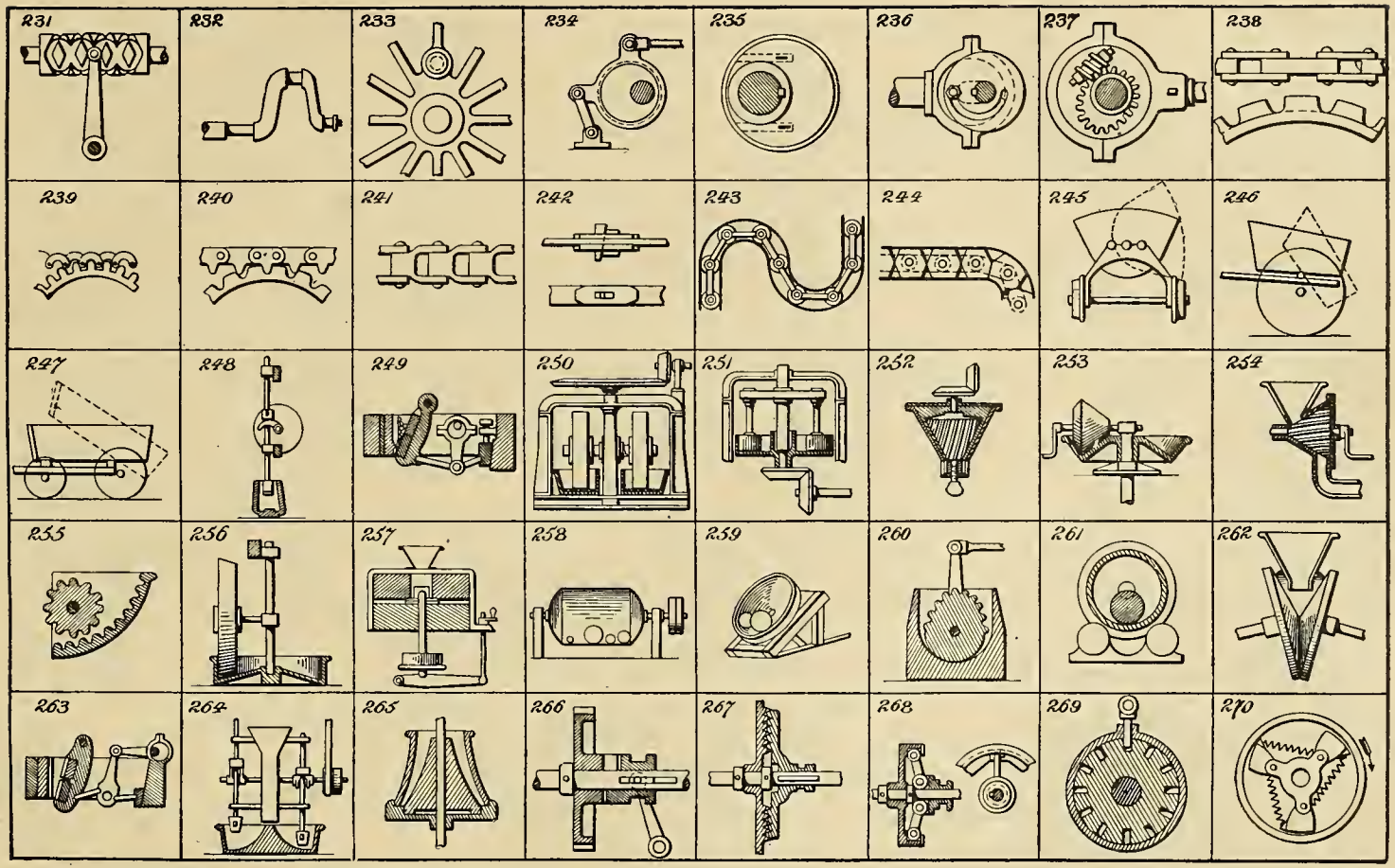
209-210.—Common Forms of Car Brake.....211.—Strap and Lever Brake.....212.—Centrifugal Clutch Brake .....213.—Shaft Grip.....214.—Three Segment Brake.....215.—Organ Bellows.....216.—Wiper and Lever Motion.....217.—Crank and Lever for continuous or intermittent motion.....218.—Stamp Mill.....219.—Snake or Scroll Cam.....220.—Piston Lever Motion.....221-222.....Reciprocating Lever Motions.....223.—Four Bolt Camplate—Used for screwing dies, locks for fireproof safes, &c.....224-226.—Sector Wheels, and Bent Lever, used on Cornish Engine valve-gear.....225.—Belt Shifting Device with dead travel at halfstroke..... 227.—T-Lever Valve Motion for rock drills, &c.....228.—Slot Cam and Lever Motion.....229.—"Swash Plate" or Disk Cam.....230.—Barrel Motion, for musical instruments, looms, &c.....231.—Duplex Screw Gear, for converting circular into reciprocating motion.....232.—Crank Pin Eccentric.....233.—Spoke Wheel Crank Pin. .....234.—Eccentric Motion, for multiplying travel of eccentric by leverage.....235.—Split Shear Eccentric 236.—Variable Throw or Shifting Eccentric.....237.—Another form of Shifting Eccentric—Shear is loose on an eccentric boss cast with worm wheel which operates it mounted on shear .... 238.—Sprocket Chain and Wheel .....239.—Special Form of Pitched Chains.....241.—Square Link Chain.....242.—Gib and Cotter for Chains .....243-244.—Thrust Chain, with friction rollers, used in hydraulic engine run.....245.—Tipple Cart, side tip. .....246.—Tip Cart .....247.—Tip Wagon.....248.—Stamp Mill.....249.—Ore Crusher.....250.—Grinding Mill—Centrifugal roller.....252.—Cone Roller Mill.....253.—Conical Pin and Roller.....254.—Ordinary Grinder Mill.....255.—Toothed Sector Mill.....256.—Conical Edge Runner and Pan.....257.—Ordinary Flour Mill.....258.—Tumbler Barrel, for burnishing castings, &c., by mutual attrition.....259.—Inclined Pan and Ball Mill.....260.—Oscillating Crusher Mill.....261.—Revolving Drum and Roller Mill.....262.—Cone Disk Mill.....263.—Another form of Ore Crusher.....264.—Revolving Stamp and Pan Mill.....265.—Vertical Cone Mill.....266.—Common Slide Clutch.....267.—V-Groove Friction Clutch.....268.—Radical Arm Friction Clutch.....209.—Pin and Hole Clutch.....270.—Cam Clutch—Drives one way—runs loose on the other..... 271.—Pantograph for enlarging pictures. A is pivot, B is tracing point, C reproducing pencil.....272.—Bayonet Joint.....273.—Band Brake.....274.—Union Coupling.....275.—Tightening Link for Chains.....276-277.—Clamp Drills.....278.—Wiper or Lift Cam.....279.—Sprocket Wheel.....280.—Flanged Flat Belt Pulley..... 281.—Plain Pulley.....282.—Concave Pulley, For round band.....283.—V-Grooved Pulley.....284.—Serrated Face V-Grooved Pulley.....285.—Parallel Ruler.....286.—Stamp Mill Rack Gear.....287.—Anti-Friction

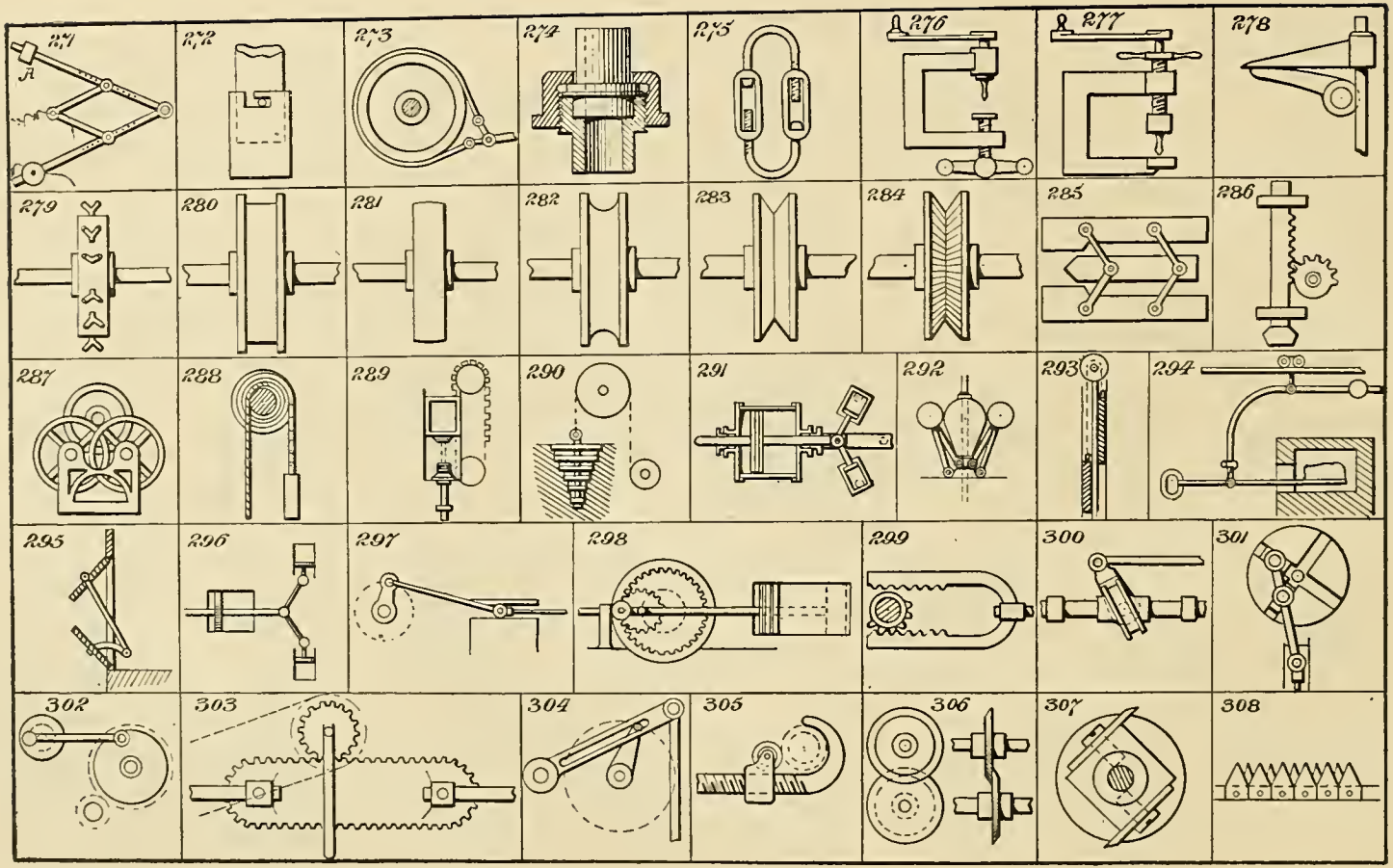

163
164
165
X
166
Z Z
167
168
169
170
171
172
b
a
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190

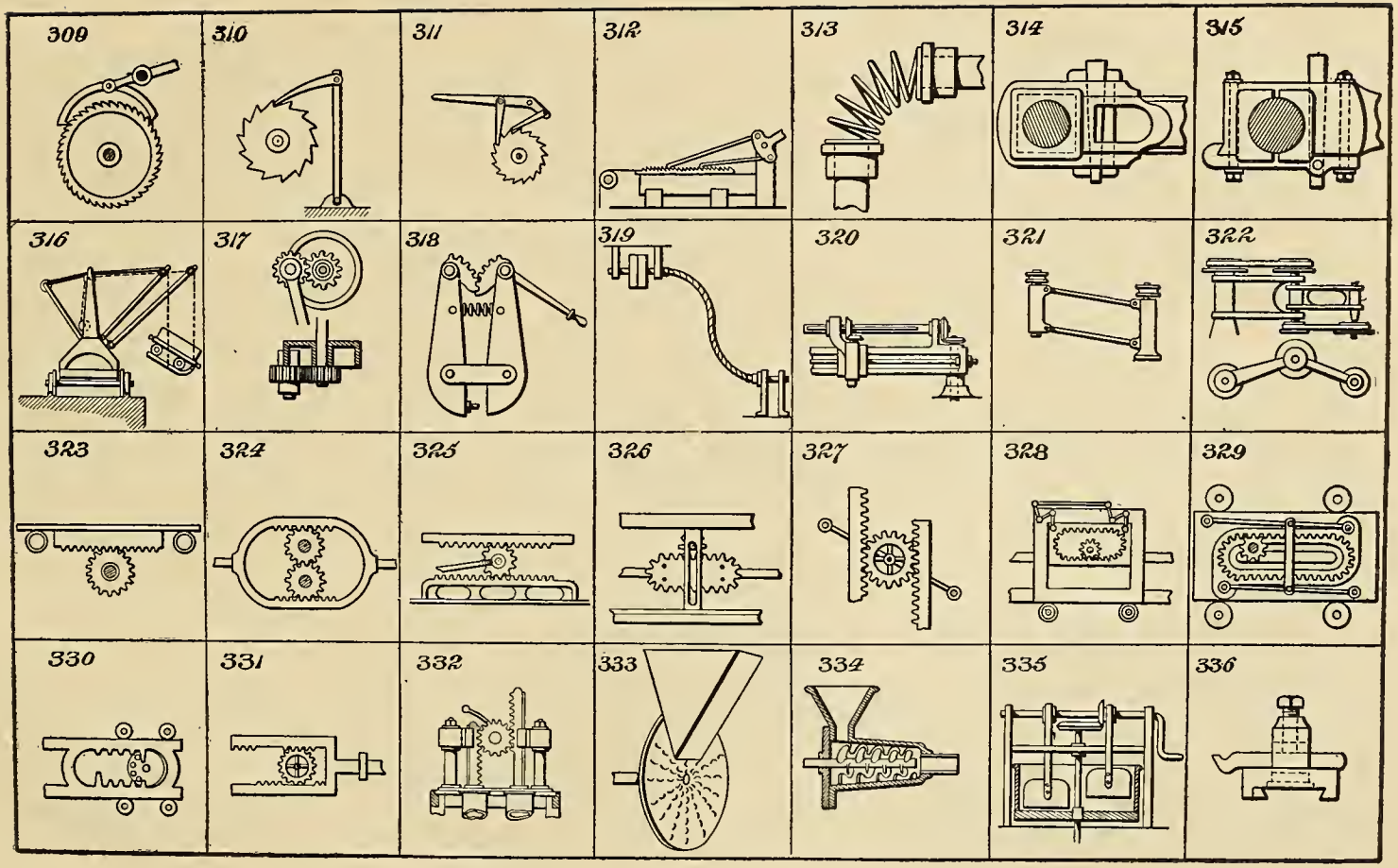
Bearing.....288.—**Compensating Shutter Balance**.....290.—**Increasing Section Balance**.....291-296.—**Worthington's Compensating Air Cylinders**.....292.—**Dawson's Compensating Governor**.....203.—**Balanced Sashes**.....294.—**Bloom Balancing Mechanism**.....295.—**Balanced Hinge Doors**.....297.—Ordinary **Piston Rod** and **Crank Motion**.....298.—**Epycycloidal Parallel Crank Motion**.....299.—**Segment Pinion** and Double Rack.....300.—**Warwick's** Patent Circular Motion converted into reciprocating by diagonal grooved sheave.....301.—**Trammel Gear,** one revolution of wheel to two double strokes of piston.....302.—**Reciprocating Wheel and Crank Motion**.....303.—**Mangel Rack** and **Pinion**.....304.—**Crank Pin** and **Slotted Lever**.....305.—Ordinary **Pipe Cutter**.....306.—Ordinary **Rotary Cutter Disks**.....307.—**Cutter Head,** for wood working machinery.....308.—**Sycle Bar or Cutter**.....309.—**Vibratory Motion** of double lever—imparts continuous rotary motion to ratchet wheel.....310-311.—**Intermittent Ratchet Motions**.....312.—**Intermittent Rectilinear Motion**.....313.—**Angle Coupling**—flexible.....314.—**Strap Head Connecting Rod**.....315.—**Pitman Rod Coupling,** side strap.....316.—**Wagon Tip Crane,** for loading vessels.....317.—Another form of **Sun** and **Planet Gear**.....318.—**Double Toothed Cam** and **Lever**.....319.—**Flexible Shaft,** for light driving.....320.—**Bevel Gear** and **Feather Shaft**.....321.—**Parallel Motion,** radiating driving device.....322.—**Jointed Radiating Arms**.....323.—Circular into rectilinear motion, or vice versa .....324.—Rotary motion of toothed wheel produces rectilinear motion of double rack.....325.—Motion for doubling the length of piston rod.....326.—**Reciprocating Rectilinear Motion** is imparted to rack bar by pinion which runs up and down in slot and engages upper and lower faces of bar.....327.—**Air Pump Motion,** alternate rectilinear motion to rack bars.....328.—**Reciprocating Rectilinear Motion** in two different horizontal planes, is imparted to internally toothed rack bar.....329.—Another **Mangle Rack Motion,** rack frames reciprocated in different horizontal planes.....330.—Another form of **Mangle Rack,** rack bar moves in same horizontal plane.....331.—**Rectilinear** movement of the rack, imparts rotary motion to pinion.....332.—Vibratory motion of handle on pinion imparts reciprocating motion to the racks.....333.—**Disk Grater or Cutter**.....334.—**Spiral Tapered Revolving Cutter,** for mincing machines.....335.—**Rectangular Cutters** for mincing machines.....336.—**Tool Holder,** for lathes &c.....337.—Cam-lever **Rail Grip**.....338.—**Pipe Tongs**.....339.—self adjusting **Jaw Grip** for round articles.....340.—**Adjustable Grip Tongs** for lifting heavy articles.....341.—Revolving **Tool Post** or head.....342.—Double Screw **Gripping Tongs**.....343.—**Mooring Screw**.....344.—Twist Drill Point.....345.—Counter Sinking Drill for wood boring.....346.—Diamond Drill for rock boring.....


191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230

347-348-349-350.—Well Boring Tools.....351.—**Differential Pulley Block**.....352.—**Equational Box** used on traction engines.....353.—**Differential Governor**.....354.—Varying differential regulator.....355.—Overhead oscillated **Cylinder Engine**.....356-357.—Two forms of **Ellipsograph Crank Motion**.....358.—**Huxley's Wheel,** spring tire and jointed spokes.....359.—Bent Spring spoke wheel.....360-361.—Cross section of rubber tires .....362.—Ordinary form of gasometer.....363.—An expanding basket.....364.—An expanding socket..... 365.—Expanding Grating.....366.—Round Taper Pin.....367-368.—Split Key or Pin.....369.—Simple form of Ball Governor.....370.—Friction Disk and Pinion to reverse motion or vary speed.....371.—**Rope Guide** 372.—**Conical Rotary Gear**.....373.—**Triangular Eccentric** for imparting intermittent stroke to piston.....374. —Multiple **Trammel Gear**.....375.—**Double Rack and Pinion Gear**.....376.—Another form of **Epicycle Gear** .....377.—Noiseless gearing for two shafts running in opposite directions. Each shaft has two equal cranks at right angles which are coupled by links to rocking arms which are also coupled in pairs.....378.—Snail Wheel .....379.—Double Screw Steering Gear.....380.—Crank Gearing for two shafts running in the same direction .....381.—Angle Coupling.....382.—Worm and Crown Gear.....383.—Ball Wheel with gears to engage one or two pinions.....384.—Centrifugal or Ball Governor.....385.—**Gas Engine Governor**.....386.—**Self Gripping Claw or Grab**.....387.—**Grab Bucket**.....388.—Double S Links.....389.—Rope Grip and Hook.....390. —**Snap Hook**.....391.—**Snap Link**.....392.—**Slip Hook**.....393.—Self Locking **draw Bar Hook**.....394.— Fixed Bar-Hook with Gravity Snap.....395.—**Corn Crane** or Swivel Hook.....396.—**Bolt Shackle**.....397.— **Straight Jet** Nozzle.....398.—**Fan Jet** or Spreader..... 399-400.—**Spray Jets**.....401.—Common form of **Injector**.....402.—The ordinary double brassed pedestal or **Plummer Block**.....403.—**End Thrust Bearings**..... 404.—Horizontal pivot and set screw.....405.—**Spherical Step Bearing**.....406.—Self adjusting bearing for line shafts with ball and socket movement.....407.—Ball and socket centre for car bodies.....408-409.—Single and double bell crank levers.....410-411.—Different forms of starting levers, spring catch.....412.—**Common Latch**.....413.—**Spring Bolt** .....414.—**Cam Locking Bolt**.....415.—Crank movement **Locking Bolt**.....416.— **Hasp and Staple**.....417.—Rope or rod stopper with cam grip.....418.—**Spindle Grip**.....419.—Clamp and screw.....420.—**Bayonet Joint**.....421.—**Knuckle or Rule Joint**.....422.—**Lubricator**.....423.—Another form of lubricator.....424.—**Hydraulic Ram**.....425.—Ordinary crank motion.....426.....Crank motion with slotted yoke and wrist pin.....427.—Crank device for producing irregular vibrating motion.....428.—


231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270

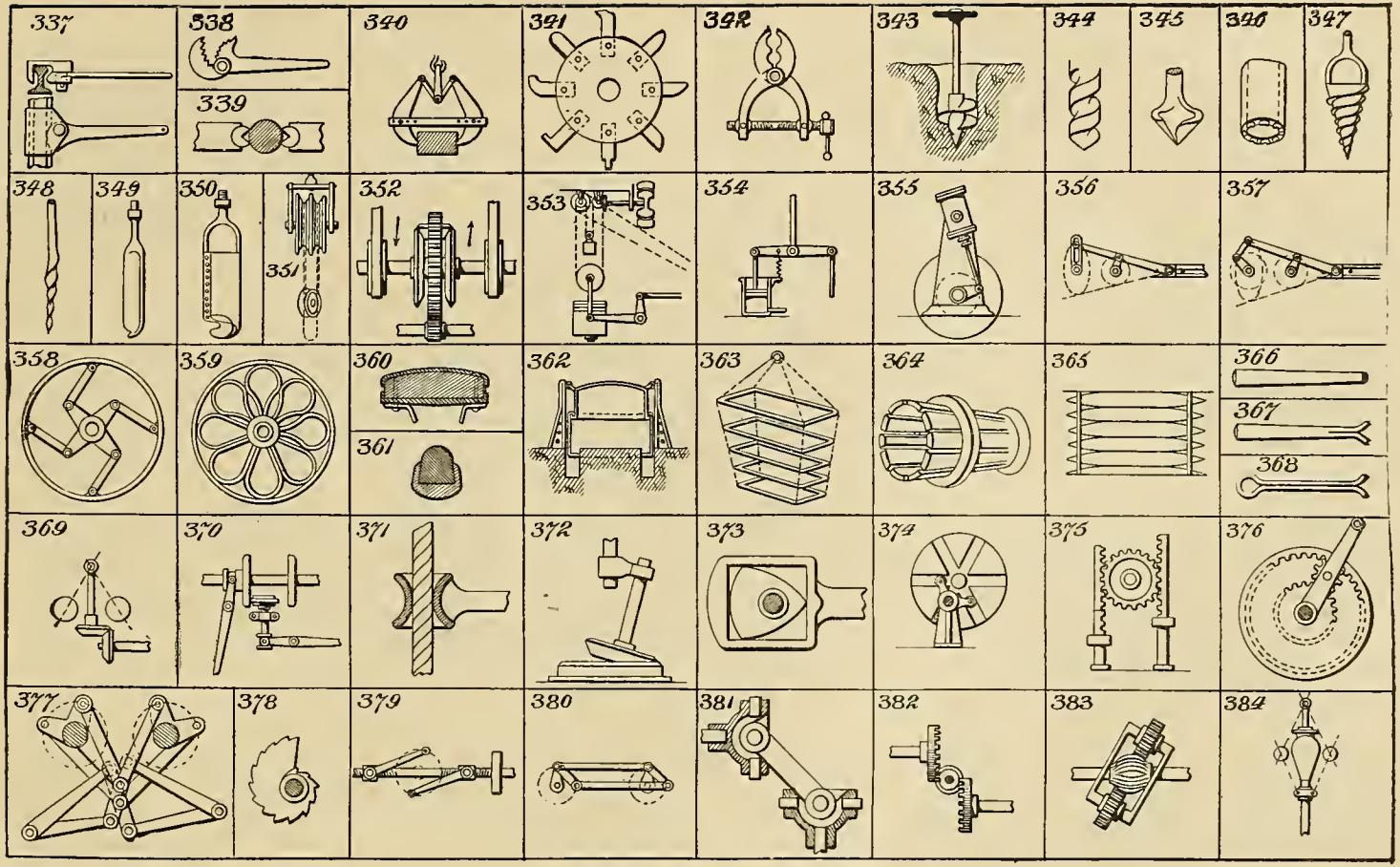

271
A
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308


309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336

Rectilinear motion of horizontal bar produced by means of vibrating slot bar hung from the top.....429.—Means for imparting rectilinear motion to the bottom rack by a vibrating toothed sector operated by a rotary driver..... 430—Reciprocating curvilinear motion of beam gives a counter rotary motion to the crank and fly wheel..... 431.—Continuous rotary motion of the disk produces reciprocating rectilinear motion of the yoke bar by means of a wrist or crank pin on the disk working in a groove of the yoke.....432.—Circular motion is transmitted into variable alternate rectilinear motion by the wrist or crank pin on the disk working on the slot on the bell crank lever.....433.—**Ordinary Treadle Motion** for imparting a rotary motion to the disk.....434.—**Ordinary Crank** pin and rod, the rod having a limited oscillating movement.....435.—Means for imparting a complete revolution to the engine crank at each stroke of the piston.....436.—Engine uncoupling contrivance.....437.—Means for imparting motion to two crank shafts held in a parallel direction but out of line with each other.....438.—Speed gearing.....439.—Drag Link Motion.....440.—Means of producing reciprocating motion from circular motion by crank and oscillating rod.....441.—Crank and Slot Cross Head with sliding journal box.....442.—Another form of disk slotted link and wrist pin motion.....443.—Patent crank motion to overcome dead centres.....444. —Bell crank motion.....445.—Means of transmitting circular into alternate rectilinear motion.....446.—Hollow revolving Cutter Head for round wood rods, broom handles, etc.....447.—Crank Pin and Bell Crank.....448.— The slotted crank at the left hand of the figure is on the main shaft of the engine and the pitman which connects it with the reciprocating moving power has a pin working in the slot of the crank.....449.—Shows a modification of the form shown in 448.....450.—Friction pulley.....451.—Ordinary Flange Coupling.....452-453.—Sleeve Couplings.

ROTARY ENGINES.

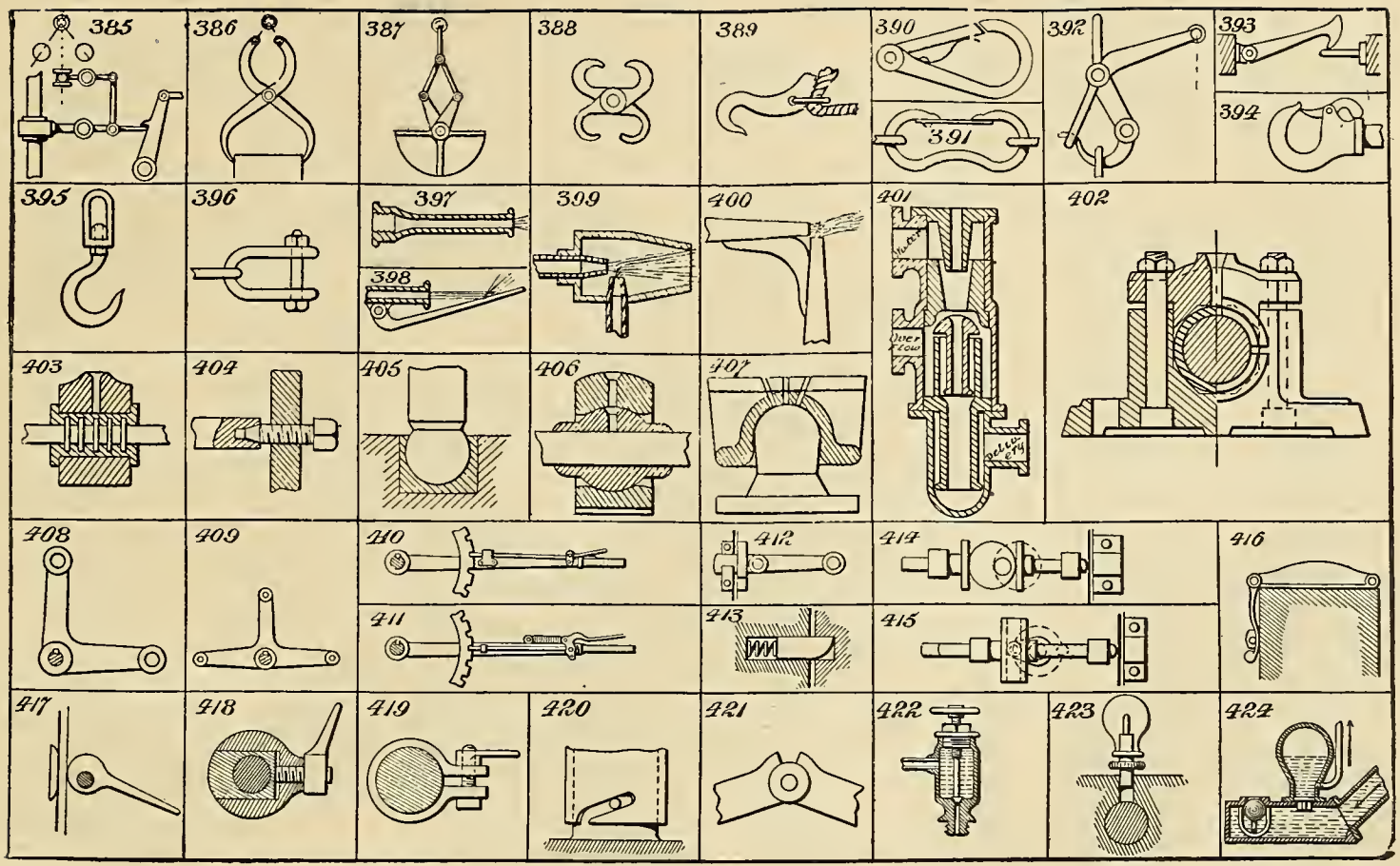
454.—**Disston's**; also used as a pressure blower.....455.—**Gould's** rotary engine.....456.—**Root's** rotary engine.....457.—**Root's** blower and pump.....458.—**Bayley and Sewal's** rotary pump.....459.—Eccentric piston with a plurality of radial veins.....460.—Inter-gear piston engines.....461.—**Grejnel's** rotary pump.....462.— Another form of inter-gear engine.....463.—Still another form of inter-gear engine.....464.—Another variety of inter-gear engine.....465.—Crescent shape piston having accumulative action.....466.—**Concentri Piston:** radial abutment and flap valve.....467.—Sliding abutment and triple cam engine.....468-469.—Other forms of Root engines.....470.—Eccentric piston having hinged valves opening by centrifugal force.....471.—Eccen-

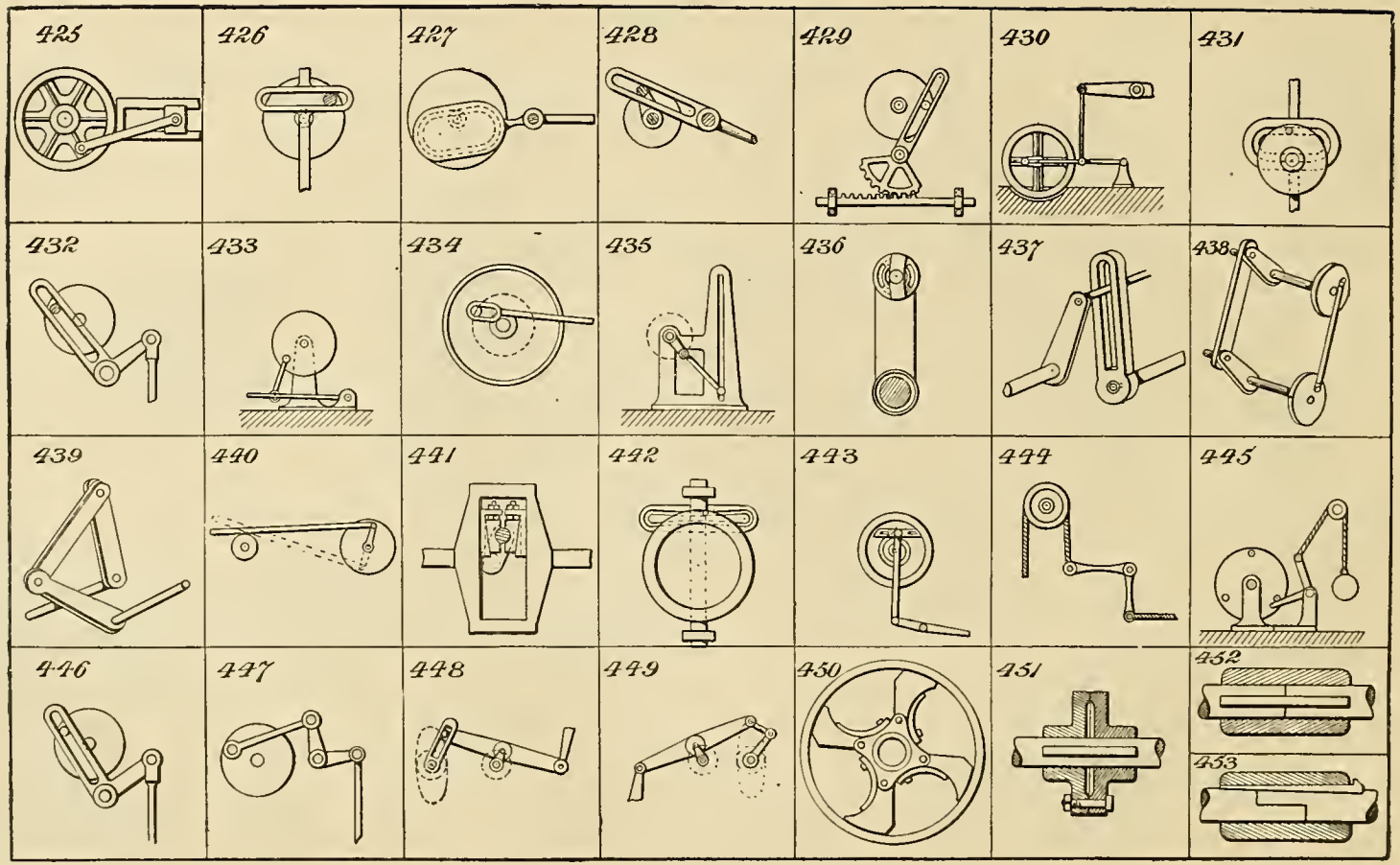

337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384

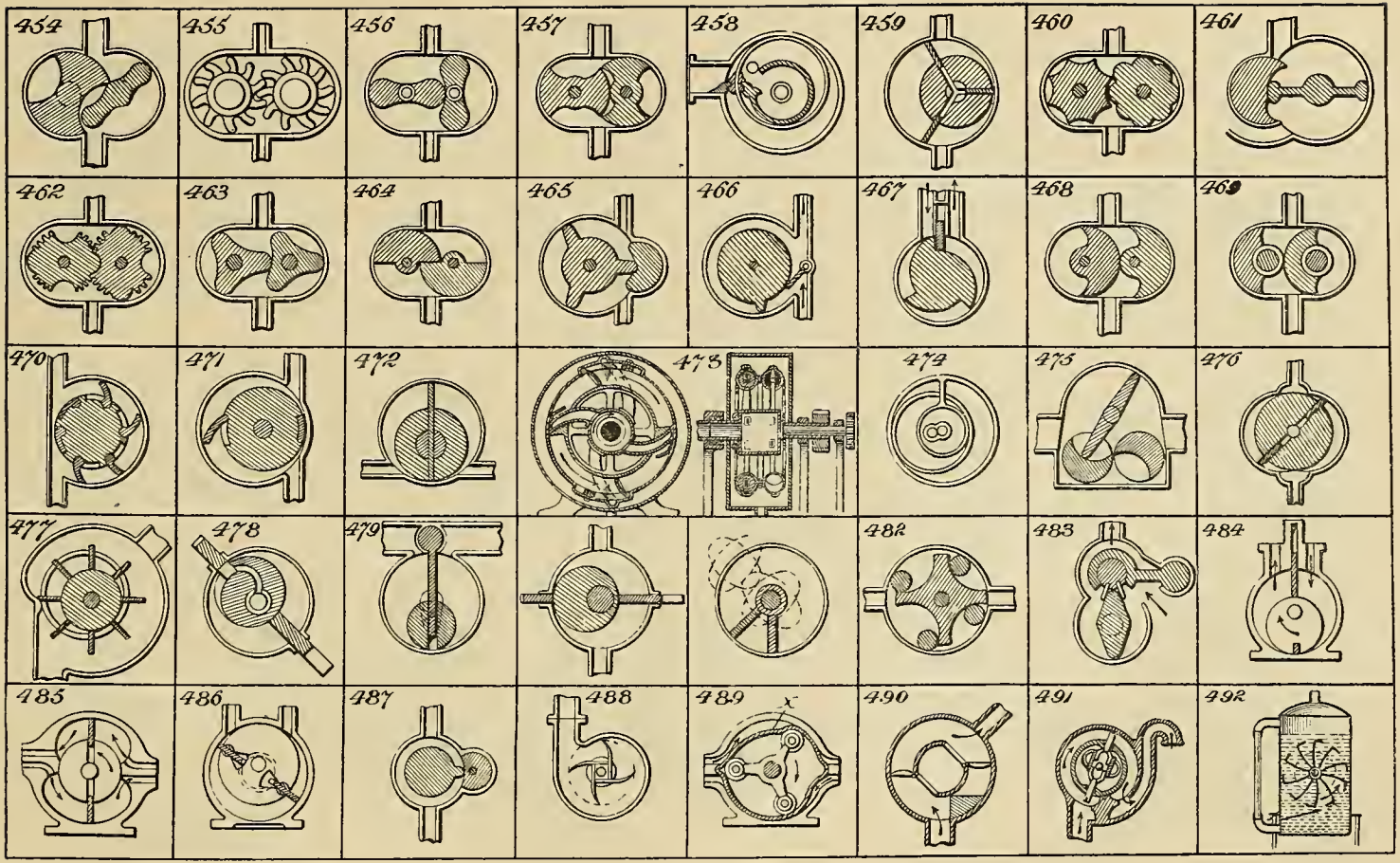
ric piston with one or more hinged veins.....472.—Eccentric piston with sliding valves extending clear through the piston.....473.—**Walker's** engine.....474.—Klein's motion.....475.—**Baker's** pressure blower. 476.—Modification of the form shown in 472.....477.—Eccentric Ring revolves on its centre and allows the vanes to alternately project in the steam space as the wheel revolves.....478.—Illustrates a modification of 472.....479.—Shows a form of engine having a rocking vane oscillated by an eccentric carried round by a crank.....480.—Eccentric piston with two sliding vanes or buttons.....481.—**Differential Rotary Engine** with eliptical gear.....482.—Eccentric four arm piston with four rolling stoppers or cut-offs. ....483.—Mellors patent pump, has rocking vane or partition with packing device which accommodates itself to the revolving oval piston.....484.—**Eccentric Piston,** central sliding abuttment.....485.—**Concentric Piston,** a pair of eccentric abuttments and piston having sliding valves or wings.....486.—Another form of rotary engine having eccentric piston and sliding valves.....487.—Shows a modification of 465.....488.—**Centrifugal Rotary Pump**..... 489.—India-rubber rotary engine in which the cylinder has an india-rubber lining indicated by x.....490.—The old form of rotary force pump.....491.—Carey's rotary pump.....492.—U. S. Patent.

BICYCLE MOVEMENTS.

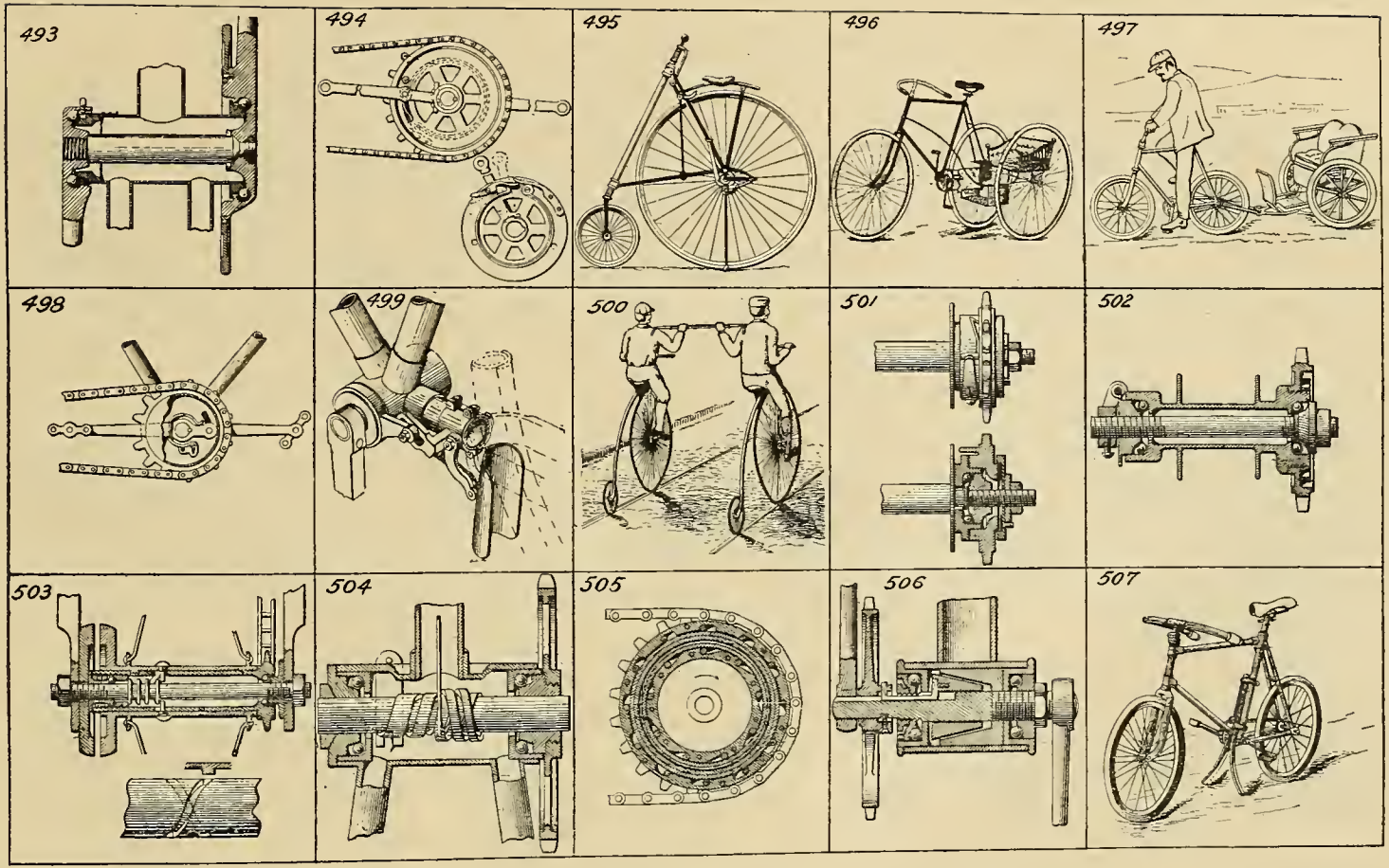
493.—Bicycle **Crank-Shaft** Bearing.....494.—**Hoffmeisters' Back Pedal Brake**.....495.—**Stephens' Bicycle Brace**.....496.—**Lords' Bicycle Attachment**.....497.—**Bicycle propelled Wheel**.....498.—Another form of "Back Pedal" brake.....499.—The Morrow (Eclipse) brake.....500.—Coupling for connecting two riders..... 501.—Doolittle's "Back Pedal" brake.....502.—Ball-Bearing adjusting means .....503.—**Logans' Bicycle** brake. 504.—Another form of brake.....505.—Back Pedaling brake.....506.—another form of Back Pedal brake..... 507.—**Jerome's Bicycle** Support.


385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424


425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453

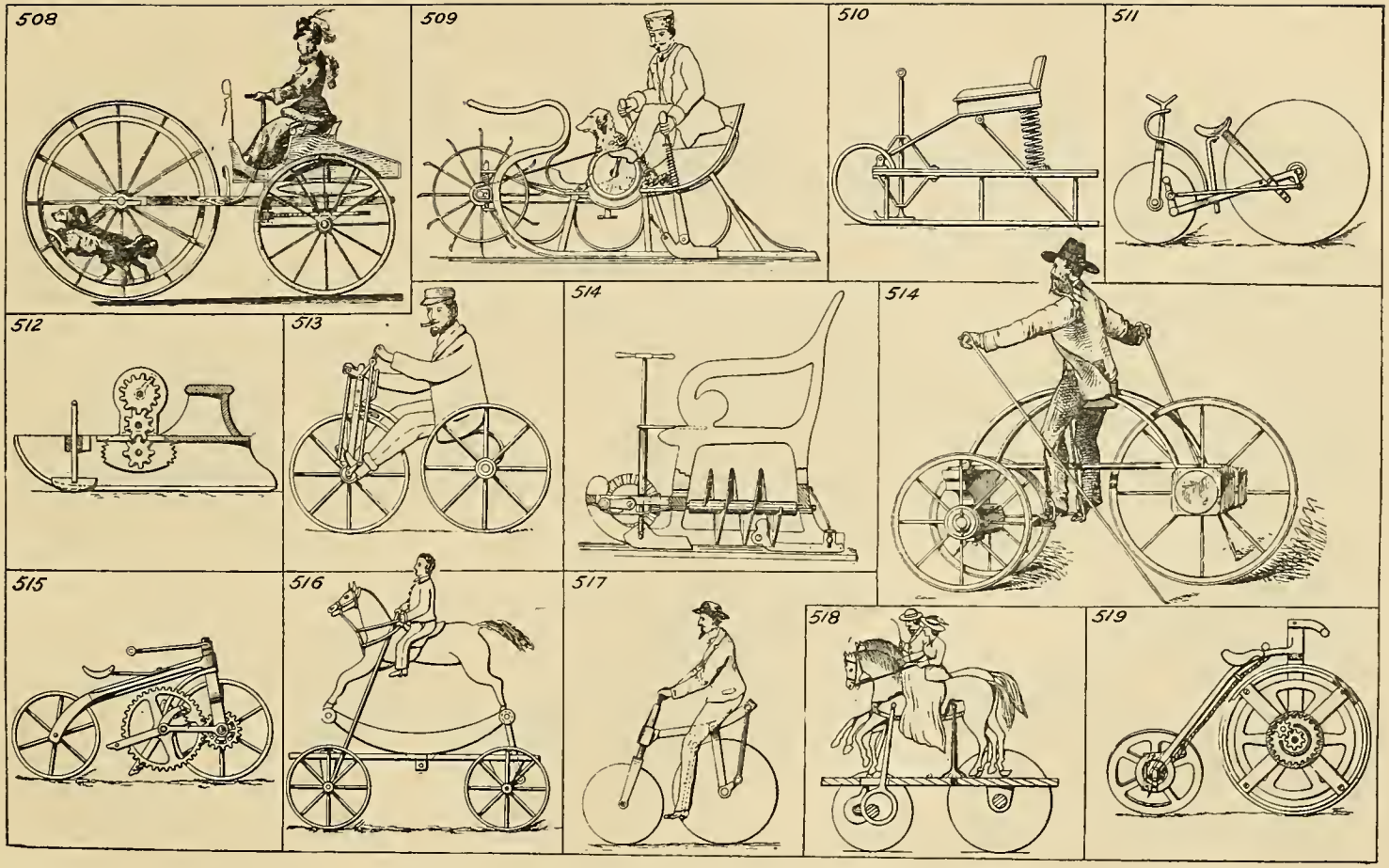

454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
482
483
484
485
486
487
488
489
490
491
492

508.—**Dog Power Motor**—patented 1870.....509.—**Velocipede Sleigh**—patented 1870.....510.—**Self-propelling Sleigh**—patented 1871.....511.—**Reciprocating Pitman Velocipede**—patented 1869.....512.—**Velocipede Sled**—patented 1872.....513.—**Hand-operated Velocipede**—patented 1869.....514.—**Ice Velocipede**—patented 1875.....514a.—**Tricycle**—operated by alternately pressing rods against ground—patented 1877.....515.—**Speed-geared Bicycle**—patented 1869.....516.—**Crank-operated Velocipede**—patented 1860.....517—**Neilson's Velocipede**—patented 1869—operated by rider pressing up and down on the seat.....518.—**Crank Motion Velocipede**—patented 1869.....519.—**Velocipede**—having Gyroscopic or Planet Gear—patented 1881.....520.—**Hallenbeck's Bicycle Driving Mechanism**.....521.—**Brook's Bicycle Support**—patented.....522.—**Krunk's Toy Perambulator**.....523.—Velocipede with swinging supporting arm—patented 1869.....524.—**Speed Gear** for chainless bicycles.....525.—**Exercising Tricycle**.....526.—**The original pneumatic tire patent,** now expired. Patent issued to R. W. Thompson May 8, 1847, No. 5,104. This patent claimed "the application of elastic bearings round the tire of carriage wheels".....527.—Bicycle support—patented 1894.....527a.—Tricycle with sectional axle.....528.—Chainless drive gear—shaft connecting axle with drive wheel being flexible.....529—**Bickford's Bicycle Brake.**—patented 1892.....530.—**Chainless Drive Gear**—1896 type.....531.—**Wind-propelled Bicycle**.....532.—Simple clutch mechanism for changing speed gearing for Bicycles.....533.—**Torsional Spring Power** means for accumulation gearing.....534.—**Brown's "Back Pedal"** Brake Mechanism.....535—Bicycle Support, 1897 type.....536.—**Grove's Bicycle Chain Brake**.....537.—Mechanical movement for toy velocipedes, &c., spring wound.....538.—Toy velocipede.....539.—Bicycle Brake, 1898 type.....540.—**De Redon's** "Back Pedal" Brake.....541.—Carriage Tricycle.....542.—Another form of Bicycle Brake.....543.—Animal Power rotary platform or wheel.....544.—**"Creeping Doll"**—motor wheels inside doll body.....545.—**Bicycle Brake**—1892 type.....546.—Toy clock-work velocipede.....547.—**Continuous Propelling Force Gearing** for Bicycles.....


493
494
495
496
497
498
499
500
501
502
503
504
505
506
507

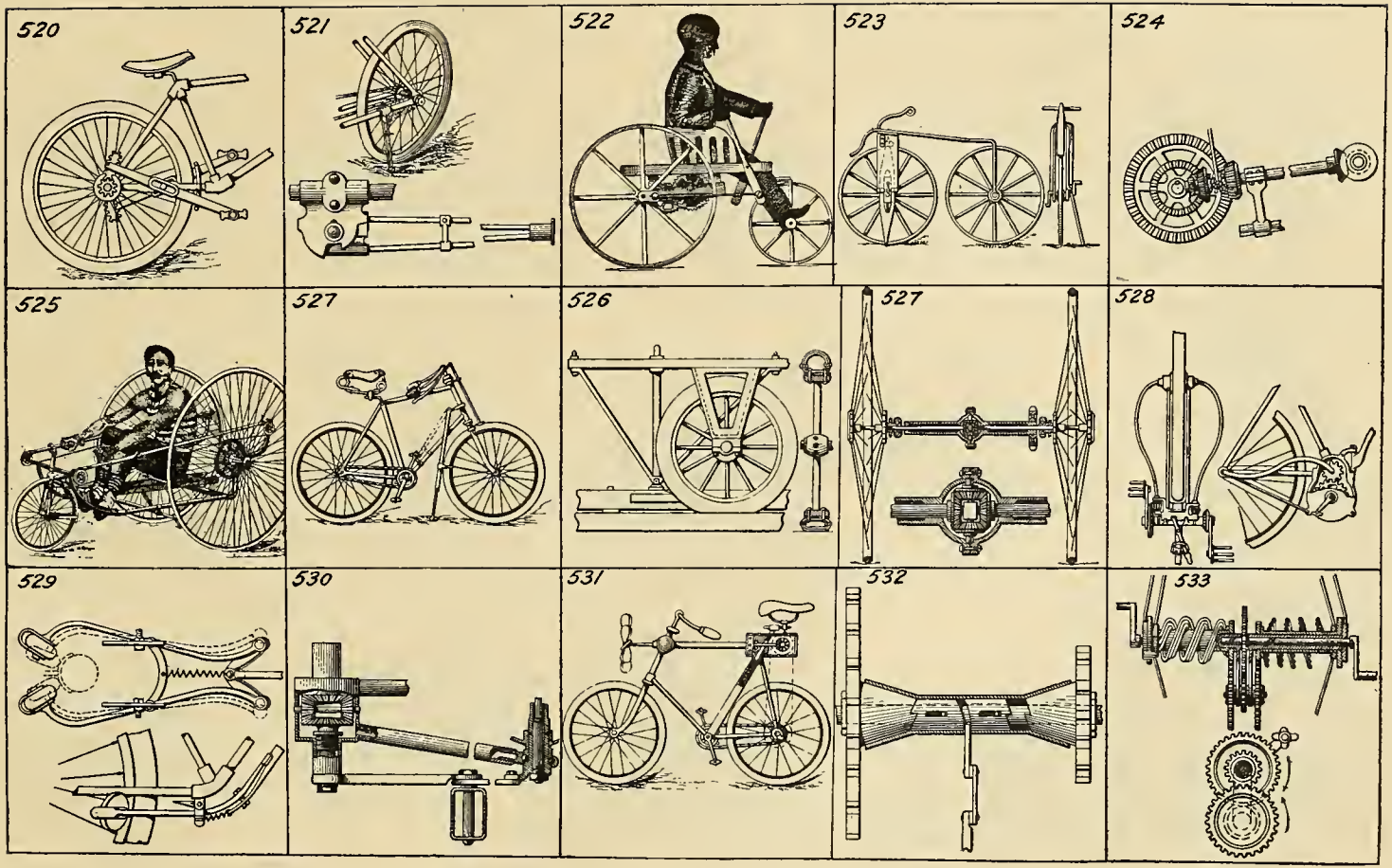
Type Writer Movements.

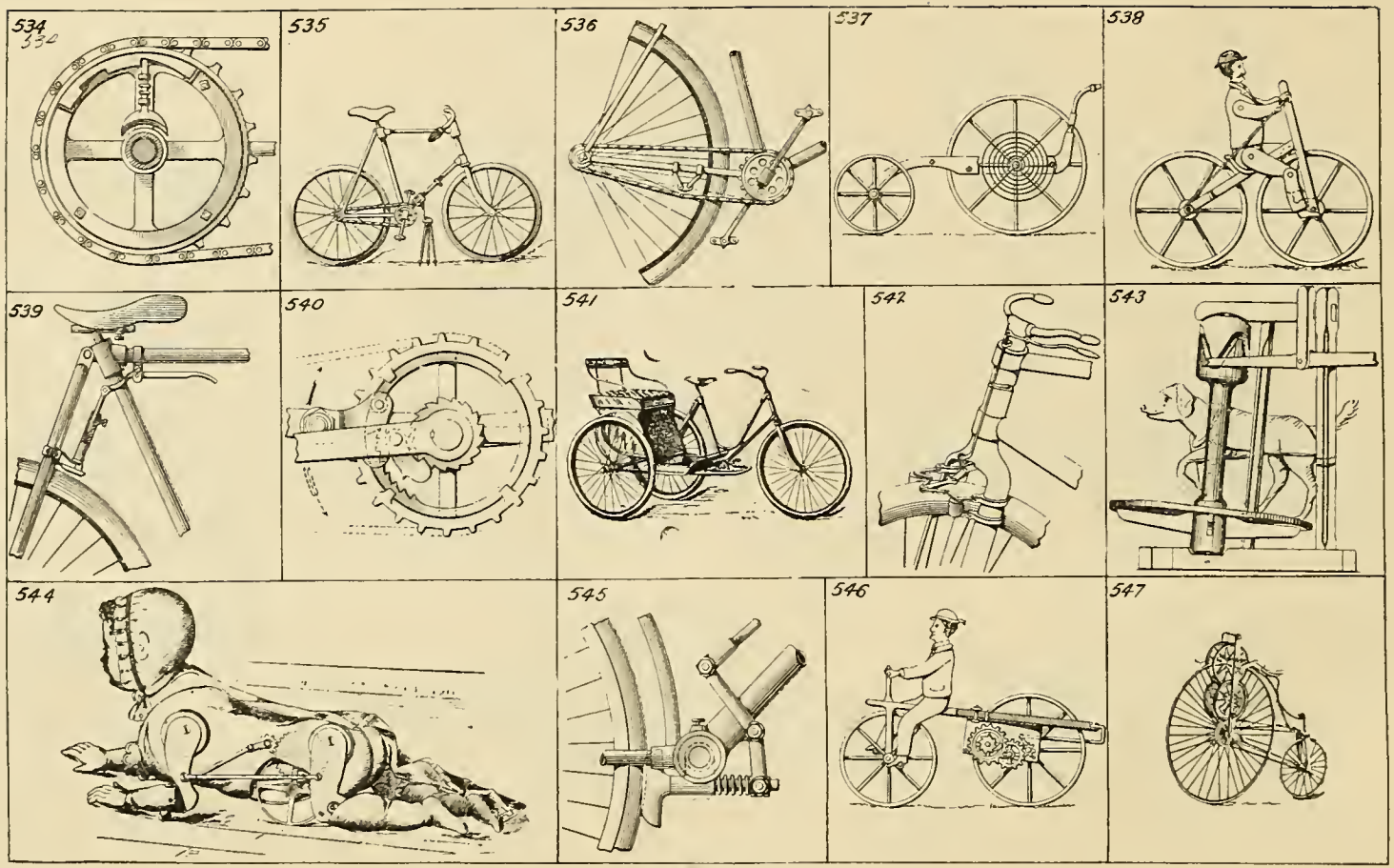
548.—**Typewriting Machine,** patented 1876.....549.—**Type Wheel Machine,** patented 1856.....550.—Movable Type Plate and Hammer, patented 1868.....551.—A common form of rachet device for rotating a typewriter carriage.....552.—A Remington Typewriter.....553.—A simple form of Escapement for Typewriters.....554.—**Printing Machine,** patented 1843.....555.—**The Original Typewriter Machine,** patented by W. A. Burt, July 23d, 1829.....556.—Ratchet Movement for Typewriters.....557.—Ribbon Operating Mechanism for Typewriters.....558.—Reverse Movement Attachment for Typewriter Machines.....559.—Spring-seated Type-carrying Key Machine, patented 1872.....560.—Typewriter Machine for printing music.....561.—A simple Card Feed for Typewriter Machines.....562.--A simple form of Lever Mechanism for Typewriting Machine.....563.—A simple form of Type Lever.....564.—Another form of ratchet-operating Mechanism.....565.—A common form of Escapement or Feed Dog Mechanism for Typewriters.....566.—Another form of Key Lever Devices.....567.—Ribbon Operated Lever Devices.....568.—Another form of Ribbon Shifting Mechanism.....569.—Shows a simple Type Operating Movement.....570.—Illustrates another form of Typewriting Machine recently patented.....571.—Illustrates another form of Pawl Mechanism for rotating the Carriage.....572.—Illustrates another form of Key Operating Lever Mechanism.....573-574.—Illustrates different forms of Typewriting Machine Mechanism.....575.—Illustrates another form of Escapement or Dog Device for Checking the Carriage Feed.....576.- Illustrates a different form of Escapement.....577.—Illustrates a Typewriter Ruler.....578.—Illustrates another form of Key Operated Lever Mechanism.....579-580.--Indicate Carriage Shifting Means.....581.—Indicates a Ribbon Carrier.....

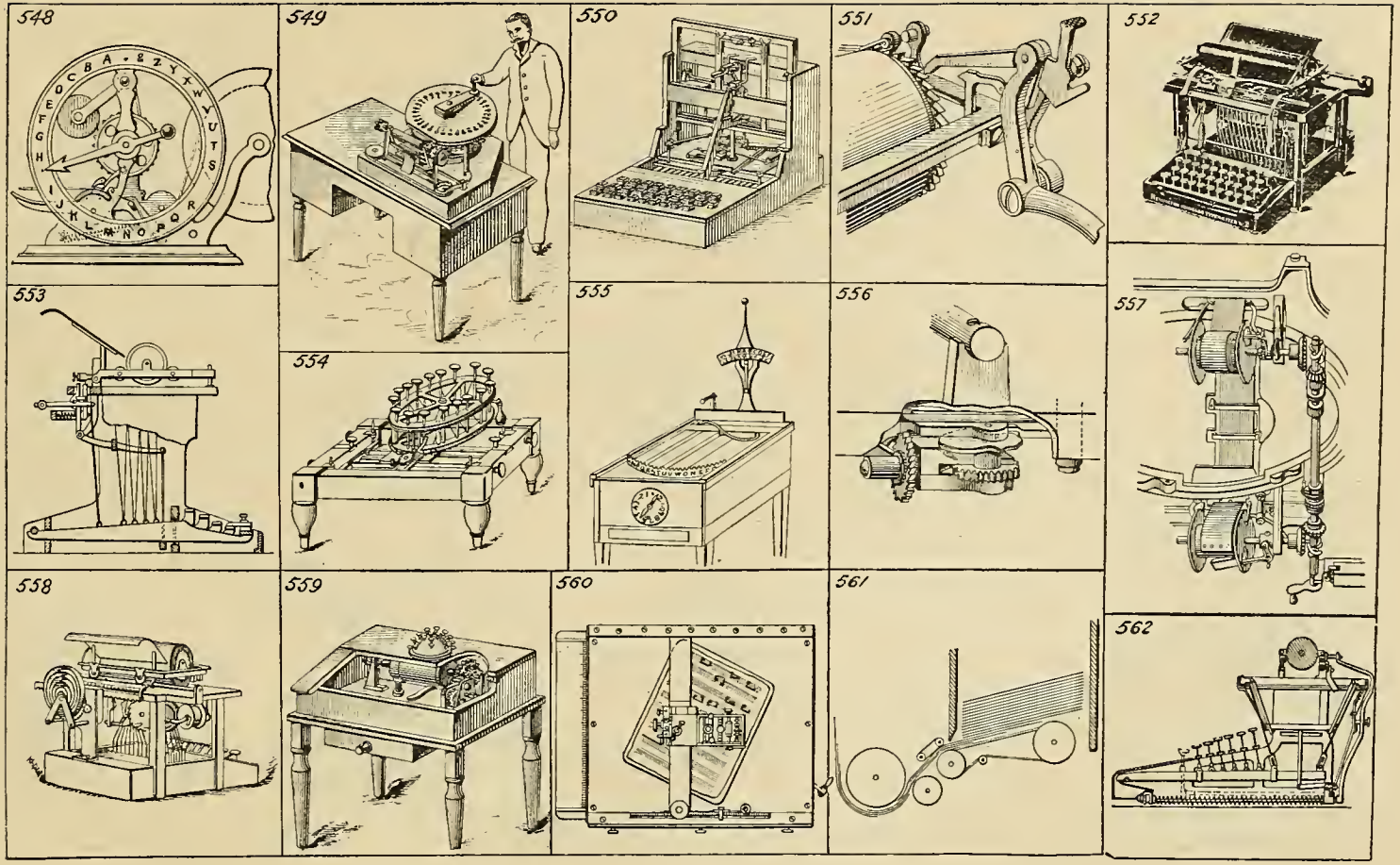

508
509
510
511
512
513
514
514
515
516
517
518
519

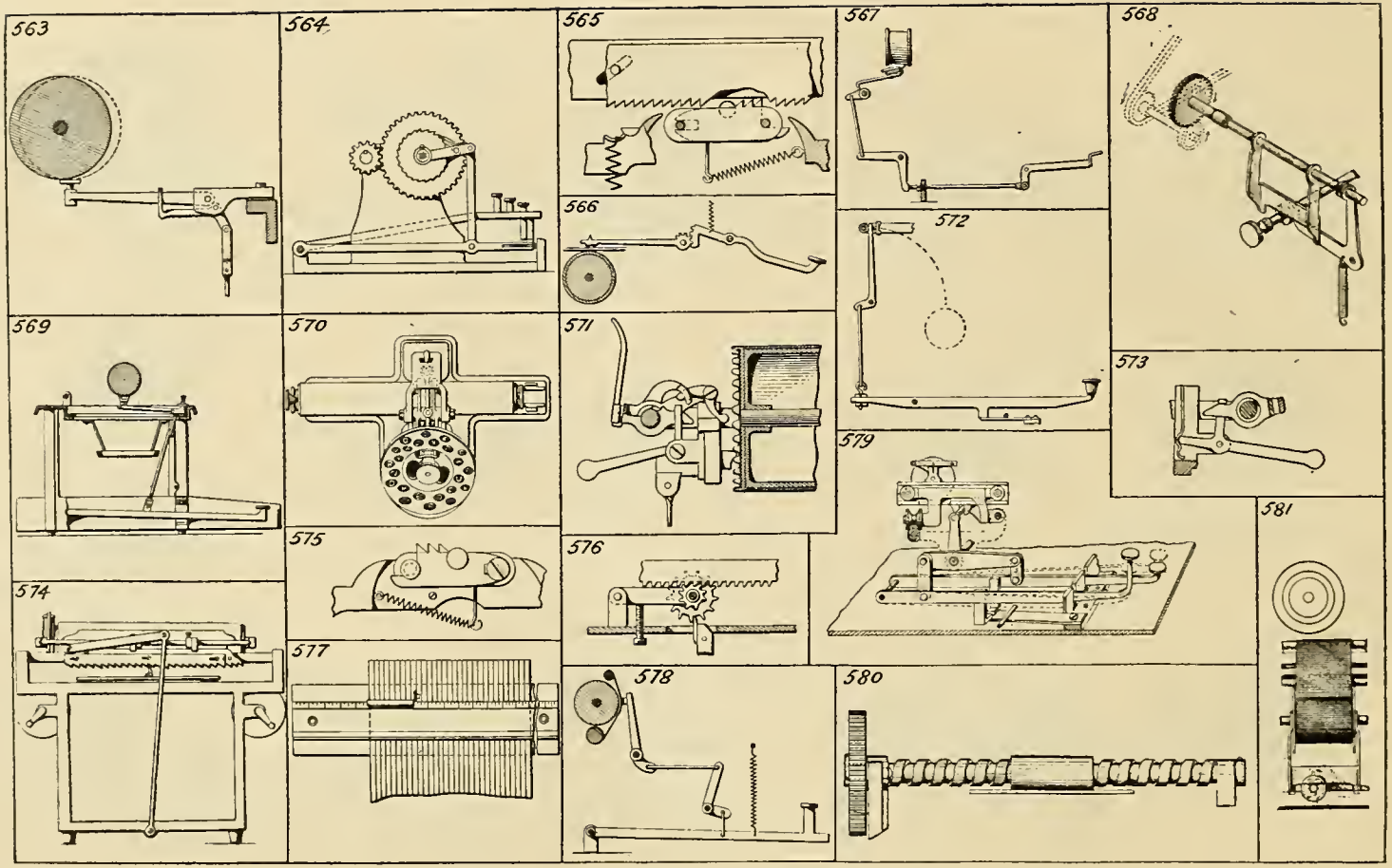
Cash Register Movements.

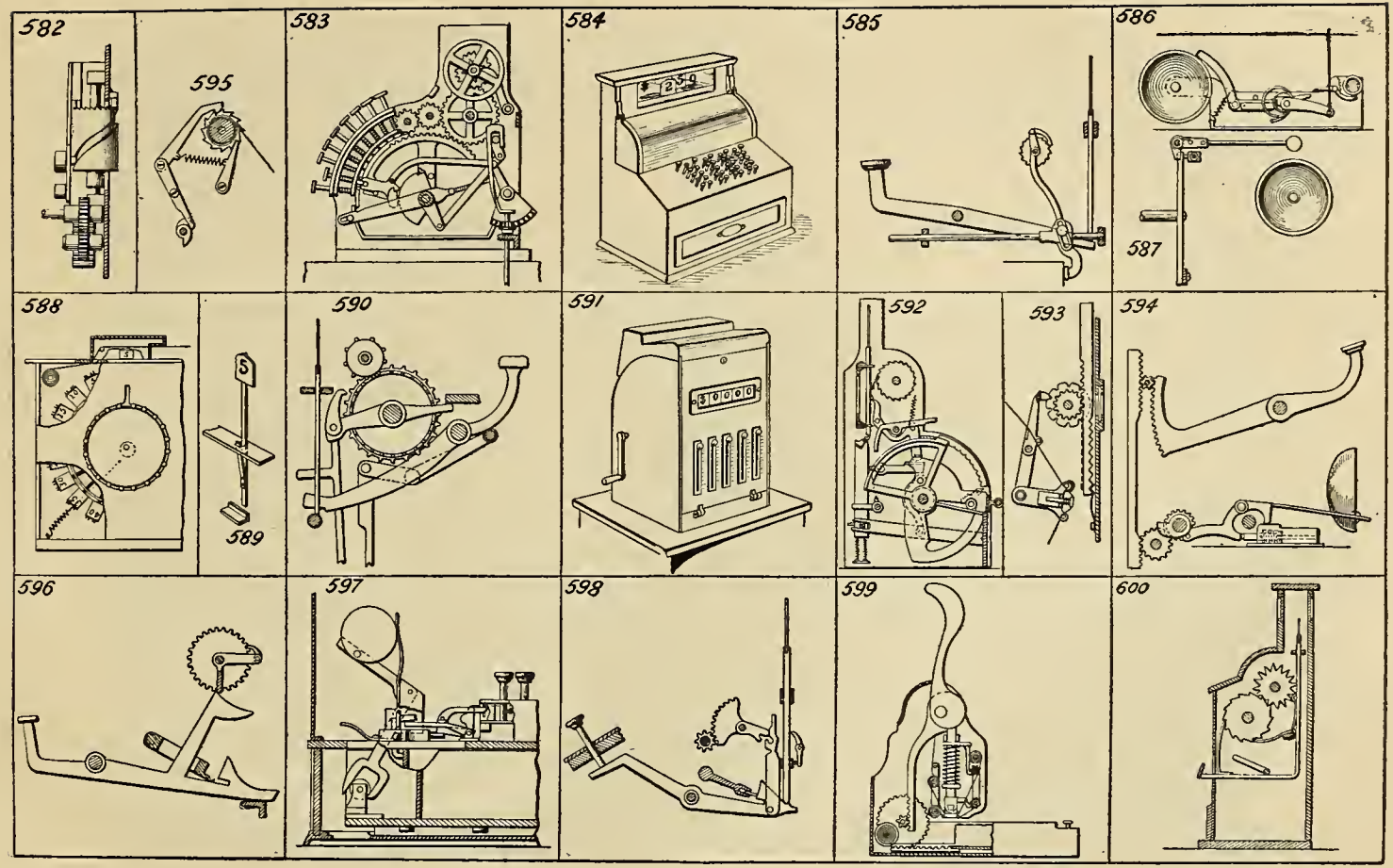
582.—Indicates a Means for Rotating an Indicator Disk by Spiral Cam.....583.—Indicates a form of Cash Register for Plunger Keys.....584.—Indicates the general appearance of the form of Register shown in 583.....585. Shows a simple Cash Register Key Movement.....586-587.—Indicates Alarm Movement for Cash Registers..... 588 589.—Illustrates simple forms of Cash Indicator Devices.....590.—Illustrates another form of Operating Key Mechanism for Cash Registers.....591.—Illustrates a form of Cash Register for Rotary Internal Mechanism and Shifting Detents.....592-593.—Illustrates Different Cash Register Movements.....594.—Illustrates a simple form of Indicator Slide Operated Lever and Gong Operated Devices.....595.—Illustrates a Double Ratchet Mechanism for Cash Registers.....596.—Indicates another form of Ratchet Mechanism for Cash Registers.....597.—Indicates a Cash Register Movement operated by a Plunger Key.....598.—Illustrates a similar Movement..... 599.—Indicates a Cam Operated Cash Register Movement.....600.—Indicates a simple form of Indicating Operating Devices for Cash Register.


520
521
522
523
524
525
527
526
527
528
529
530
531
532
533


534
535
536
537
538
539
540
541
542
543
544
545
546
547


548
549
550
551
552
553
554
555
556
557
558
559
560
561
562


563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581


582
595
583
584
585
586
587
588
589
590
591
592
593
594
596
597
598
599
600

WOMEN AS INVENTORS.

That woman is rapidly coming to the front as an inventor is evidenced by the large increase in the number of applications being filed by them. It is an erroneous impression that women invent improvements on articles especially adapted and intended for their sex, for the reason that they are constantly exercising their ingenuity in the direction of improving many of the devices and implements with which men only as a rule are supposed to deal.

The records of the Patent Office bear witness to the fact that the inventive genius of the fair sex is constantly accomplishing remarkable, advantageous, and profitable results.

Particularly in the lines of wearing apparel, household articles, and furniture, the accessories to the boudior, novelties, etc., are women displaying active and practical ingenuity.

In May, 1805, the first patent to a women was granted, a device for weaving straw with silk and thread. Some years later Mary Brush received a patent for a new style of corset.

One of the earliest inventors was Lavina H. Foy, of Worcester, Mass., who in 1862 received a patent for a corset skirt supporter.

Each weekly issue of the Official Patent Office Gazette now shows a number of new ideas invented and patented by women, and it is a fact, as a rule, inventions the product of the fair sex do not relate to or set out devices of the extreme chimerical or visionary kind too often the product of the inexperienced "first time" male inventor.

There is wide field for the exercise of ingenious minds of women. Every woman (and there are many) having a knack for mechanical structure should study to develop some new idea or thought, as the opportunity for substantial financial returns resulting therefrom is not surpassed in any other direction.

MOUNT VERNON, HOME OF GEORGE WASHINGTON.

FOREIGN PATENTS.

Inventors, as soon as they file an application for a patent in the United States or immediately after securing the allowance of the United States patent, are called upon to decide the important question—that of procuring protection for their inventions in Canada or one or more foreign countries.

The advisability of taking this course is strenuously urged by various solicitors, agents, and others, and often very liberal terms are held out as an inducement for so doing, and here is where the patentee often enters into proceedings and incurs needless expense for the want of a proper knowledge of the general requirements necessary in the procuring of foreign patents, which unfortunately are not always made clear to the applicant by those who act as his agent in the securing of his foreign patents.

While undoubtedly many unscrupulous solicitors, agents, etc., are to be found in the United States, yet the bulk of such class are located in the European capitals, and as soon as the official Patent Office Gazette, which contains the inventors' names, reaches them, they, with much persistence, send out all kinds of offers to induce the United States inventor to apply abroad.

Before deciding as to making applications for patents in foreign countries the inventor should post himself understandingly upon the technical requirements of the patent laws of different countries.

The laws relating to foreign patents differ so essentially from our own as to render the brief accounts of them, such as generally furnished by patent attorneys, agents, and others, and which usually attract the attention of inventors, and are accepted as their guide, to be productive of an erroneous impression in regard to the advantages gained in holding foreign patents.

Any one having a new invention for which he has made application in the United States and which practical demonstration has determined it one of great value and need would be unwise in not securing for such invention a monopoly in any foreign country in which the article, process, or composition would meet with a ready sale; but as the value of a foreign patent depends entirely on its validity—*i. e.*, the compliance with all the legal requirements necessary to obtain a patent that protects—it is sheer folly for any one to secure any foreign patent before acquainting himself as to what is necessary to obtain a valid patent.

FOREIGN PATENTS.

Foreign patents frequently prove of great value, and for inventions of established merit can be quickly and profitably disposed of.

In the United States the cost of a patent stops after its issue—*i. e.*, after the patent is granted the Government does not exact any payments in the nature of license or taxes during the term for which the patent is issued. Such is not the case with Foreign patents. In nearly all of the foreign countries which grant patents, taxes are payable annually. The following is a brief summary of the most important patent laws:

Patents in the United States are now granted for seventeen years irrespective of any foreign patent.

Any one obtaining a patent for his invention in any foreign country and failing to make an application for the same in the United States within twelve months of the date of his first foreign patent can not obtain a patent in the United States.

TIME IN WHICH TO MAKE A FOREIGN APPLICATION.

The time for making a foreign application for a valid patent in nearly all of the foreign countries is limited by what is known as "the law of publication."

In England a valid patent cannot be obtained if the invention has been published or made known within the realm previous to the application for the same invention.

The same applies to Germany, which country, while having the most progressive patent system of all foreign countries, apparently is so biased or narrow in its actions to inventors, particularly those of the United States, that unless the inventor has an invention of a broadly new character his chances of obtaining a patent in such country are slim.

Applications for foreign patents can now be safely filed immediately after the filing of the United States application, and the grant of a foreign patent for which the application is filed subsequent to the filing of United States application before the issue of the United States patent will not effect the term of the United States patent.

FOREIGN PATENTS.

The United States Patent Office Gazette, which reaches Europe in about ten days after its issue here, sufficiently publishes United States patents as to invalidate any foreign patent applied for and secured after the issue of the United States patent, consequently "agents," brokers, solicitors, and others who offer to secure a valid patent in all or most of the foreign countries after such publication are untrustworthy. Although the publication of a patent in the United States does not prevent obtaining a valid patent in Canada if application is filed one year from the date of the United States patent, the inventor contemplating securing a Canada patent should not delay the filing of his application unnecessarily.

As it is difficult for inventors to ascertain the reliability of a solicitor living in the city where foreign applications for patent is desired, it is better for them to employ a responsible attorney in this country, as all responsible attorneys here have reliable associates abroad in the different countries.

In England patents are granted to the first applicant whether he is the true inventor or not. His title is held legal. Thus, any unscrupulous person who may have obtained a definite knowledge and understanding of another's invention in enabled to make application for a patent for the same invention abroad while the application is pending in the United States.

Most foreign countries have a law known as compulsory manufacture, which makes the term of years a foreign patent can be held more or less dependent upon the *commencement* or continuation of the manufacture of articles or machines covered by the patent within a specified time.

England, like the United States, does not compel the patentee to work the invention.

INTERNATIONAL CONVENTION.

A large number of the various countries of the world, including the United States and most of the European countries, have entered into a treaty with one another, by which a patent can be filed in any of the countries that are parties to the convention within twelve months from the earliest date of filing of an application for a patent in any other country.

FOREIGN PATENTS.

BELGIUM.

Patent must be worked within one year of the *commencement* of *manufacture* in any other country.

AUSTRIA-HUNGARY.

Patents must be worked within one year and must not afterward cease two consecutive years.

FRANCE.

Patents must be worked within two years and must not afterward cease two consecutive years.

In many other of the foreign countries similar and other restrictions are placed, of each of which the applicant should acquaint himself before applying for a patent.

Patents are now being granted in nearly seventy countries.

CANADA APPLICATIONS.

Models are not required.

Application must be made within one year from date of United States patent.

Term of patent is eighteen years.

An inventor may lodge a caveat in the Canada Patent Office, but this does not extend the time to apply for a patent—*i. e.*, one year from date of United States patent.

Every Canada patent is conditional on the following:

"Every patent granted in Canada shall be subject and be expressed to be subjected to the condition that such patent and all the rights and privileges thereby granted shall cease and terminate, and that the patent shall be null and void at the end of two years from the date thereof, unless the patentee or his legal representatives within that period commence and after such commencement carry on in Canada the construction or manufacture of the invention patented in such manner that any person desiring to use it may make it or cause it to be made for him at a reasonable price at some manufactory or establishment for making or constructing it in Canada."

In lieu of manufacture, Canada now has a compulsory license law, under which it is very difficult, however, to bring the average patent as only those inventions can be given the advantage of such law as are not usually carried in stock or are made only to order.

The above does not mean that the patentee must personally manufacture the invention, but that any other

person desiring to use it may obtain it in Canada at a reasonable price.

The term for manufacturing can be extended from year to year by giving good and substantial reasons.

A Canada patent will also be void if the inventor imports or causes to be imported the invention for which patent is granted after the expiration of one year from the date of the patent.

Time for importing an invention in Canada can also be extended for one year by proper application to the Commissioner of Patents at Ottawa.

The tariff of Government fees in Canada are as follows:

Full fee for eighteen years	$60
Partial fee for twelve years	40
Partial fee for six years	20
On lodging a caveat	5
For recording an assignment or any other document	2

The usual charge of responsible attorneys for securing a Canada patent, which includes the Government fee for six years and the fees for preparing the official drawings and specifications and prosecuting the case, is $40 for a simple invention.

ENGLAND.

An English patent affords protection in Great Britain, Ireland, and the Isle of Man. An English patent dates from the deposit of the application.

In England two kinds of protection is afforded: First, provisional protection for twelve months, similar to a United States caveat; but when the applicant decides to complete the patent for the first period of four years, final or complete specifications must be lodged within nine months (or by special permission ten months) of the date of the provisional application.

FOREIGN PATENTS.

English Patents date from the time of filing or depositing of the application.

Provisional Patents answer substantially the same purpose as a Caveat in the United States. The charges for securing a Provisional Patent, including the Government Fee, is usually from $20 to $25.

Complete English Letters Patent are granted for 14 years, and the cost for a complete application is dependent on the character of the case. The average charge made by responsible solicitors is from $60 to $100, which includes the Government fees for 4 years and the Attorneys' fees. Annual taxes are payable beginning with the fifth year, but the first payment must be made before the expiration of the fourth year.

England does not require compulsory manufacture, nor is an English Patent made void by reason of non-manufacture or importation.

Any person using the word "patent" or "patent registered" when no patent or registration is granted, is subject to a penalty of £5 ($25.)

As a rule any invention of merit that is patented, or for which a patent is sought in the United States, would doubtless meet with a market or at least prove a paying investment by being patented in England and Canada, as England and Canada and the United States are practically allied in a commercial sense.

All first-class and responsible solicitors in the United States have representatives or associates in England who are generally able and willing to furnish names of leading manufacturers or capitalists abroad who are desirous and likely to become interested in any new and meritorious invention.

GERMANY.

Patents are granted in Germany for new inventions which permit of an "industrial exploitation."

The first to apply, whether he is the inventor or not, is entitled to claim the grant of the patent, but such patent will not be legal if the true inventor raises opposition.

The German Patent Office now makes a careful and rigid examination of all applications and the rejections are many.

Appeals are often necessary, and the first costs for an application in Germany are often greatly increased on account of appeal fees, extra Attorney's fees, etc., etc.

German Patents must be adequately worked within three years from the date of the Patent; if not, they can be revoked.

Taxes are payable annually for German Patents beginning with the second year.

The cost for a German Patent for an ordinary invention generally varies from $60 to $100, which includes the Government and Attorneys' Fees. This, however, does not include additional charges made for amending cases for appeals, extra amending, extra translating, etc., etc.

Germany also issues a special kind of Patent, which is in the nature of a provisional protection, and known as a "Gebrauchsmuster" Patent. This form of patent is somewhat in the nature of a Caveat and is of very little, if any, protection for an American inventor.

Many Attorneys advertise to secure German Patents for very low fees, much lower than those quoted above. It will be safe to avoid placing a German Application with Attorneys who advertise to secure a German Patent at a very low rate until after the inventor has received positive assurance that he is to receive a *Regular* and not a "*Gebrauchsmuster*" or provisional patent, when he orders the German application to be applied for.

FRANCE.

France is very liberal in the grant of Patents. This country is one of the best in which to patent inexpensive devices, such as novelties, as these are readily adopted by the French manufacturers.

French patents are granted for 15 years and the taxes are payable yearly. The patent must be worked in two years.

The cost of French patents for ordinary inventions is from $60 to $90, which includes the Government and Attorneys' Fees.

FOREIGN PATENTS.

BELGIUM.

Patents in Belgium cost from $50 to $75, including Government and Attorneys' Fees.

Devices for which French Patents are secured should also be covered by Belgium Patents, as the two countries are practically one, in a commercial sense.

Belgium Patents must be worked within one year from their first commercial working abroad.

Taxes are payable annually beginning within the second year.

Patents are granted in all of the other European countries as also in the Australian countries, South and Central American countries, Japan, etc.

Before making application in any of these countries the inventor should first ascertain if this particular invention is adapted for universal uses in the art to which it belongs in all or any of the countries he contemplates securing a Patent in. Having done so, he should not authorize the filing of an application until he has asked for and received full information as to the legal requirements in reference to the working of the invention, the taxes and fees on the patent and the duration of the patent, etc., etc.

In some of the Foreign Countries named the costs for securing the patent and the taxes thereon are so excessive, and the rules regarding the manufacture and working so exacting, as to render it almost impossible for any one not able to expend a large amount, to secure and maintain a patent.

CONGRESSIONAL LIBRARY.

How To Select An Attorney.

The first and most perplexing question which confronts the inventor after having matured a new machine, process or design is—How to proceed to secure a Patent.

The patent laws permit any one who lodges an application for a patent to prosecute his own case, but the rule that "It is a poor lawyer who pleads his own case," is one best applicable to those who attempt to prosecute their own application for a Patent.

On this subject the Commissioner of Patents has said: "As the value of a Patent depends on the careful preparation of the specification, drawings and claims, the assistance of competent counsel will be of advantage to the applicant, but the value of their service will be proportionate to their skill and honesty,—too much care cannot be taken in the selection of competent counsel."

"Patent Soliciting," said the late Commissioner of Patents, (the Hon. Benj. Butterworth) and the conducting of cases for inventors and owners of patents in courts, is an honorable employment, and one that requires legal training and integrity, and while it is well known that flaming advertisements and distribution of self laudatory circulars are exceptional among capable and honest lawyers, yet those methods cannot be said to be immoral or reprehensible, if properly utilized."

The terms Patent Attorney, Patent Solicitor, Patent Agent, are synonymous as to defining the general character of the business of those who make the securing of Patents for inventors a special study.

There is, however, a class, who under the title of Patent Broker, Patent Selling Agent, Patent Promoter, etc., etc., incidently make the securing of Patents a part of their business.

It is the purpose of the writer to here give such information regarding those who follow the Patent Business under any one of the heads above mentioned, so that inventors, especially those entering the inventive field with

their first case, can the better inform themselves as to the selection of a competent Attorney or Solicitor, who will not only give honest service so far as securing a Patent, but who will also advise the client as to what steps are necessary to bring his invention before manufacturers and others, and thereby place the inventor in a position to know how to intelligently proceed to introduce or dispose of his patent, with a view of making the same of profit to himself and others interested therein,—it also being the purpose of the writer to steer the inventor, if possible, from entrusting his invention, and often a possible fortune, in the hands of inexperienced and untrustworthy persons, particularly that class of so called Brokers, Promoters and other sharks whose sole mark of responsibility as to integrity and competency, consists in their ability of publishing advertisements of striking and ingenius attraction, which too often leads the inventor into a condition of circumstances, which causes him to make unnecessary expenditure of time and money, and very often, to secure Foreign Patent Rights **which are worse than worthless.**

Those who follow the Patent profession may be thus classed: 1st, the Patent Lawyer or Attorney; 2nd, the Patent Solicitor; 3d, the Patent Right Securer; 4th, the Patent Broker, Selling Agent, Promoter, etc., etc.

The Patent Lawyer or Attorney is one who particularly makes the legal conducting of cases for inventors or or patent owners, that is,—patent litigations before the courts, a specialty, and who is a regular admitted member of the legal bar. Although many of this class of lawyers also act as Solicitors for securing patents for new inventions, yet as a rule they do not make this a special part of their practice.

Attorneys of this kind, when competent and expert, usually charge very high fees for their service—difficult for the average inventor to meet.

If the inventor believes his invention to be exceptionally valuable and desires to employ a lawyer of the kind mentioned, he should be careful to select one who besides his legal training is a mechanical expert: for it is a well established fact, in the art of securing patents that a **practical mechanical knowledge** is of more consequence to the Patent Attorney than a law college diploma.

Patent Solicitors are those who make the securing of patents for new inventions in the United States and Foreign Countries a special business.

How To Select An Attorney.

The rules of Patent Office Department make it necessary that any one desiring to practice before said Department be properly registered. At the end of 1898, nearly three thousand names appeared on the register list.

As nearly 30 per cent of all the patents issued are procured by about twenty-five old established Patent Soliciting Firms, it will be apparent that the vast majority of the registrants have no regular established business. Many of said registrants are regular employes of the larger firms and not a few of them are like "Micawber"—gererally waiting for something to turn up.

That among the larger firms there are some who endeavor to give the inventor honest advice, goes without saying, but it can be also truthfully said, that the kind of service sometimes called "machine work" is more apt to be the out-put of those whose business is of such large volume that it must of necessity be consumated by numerous assistants, of more or less ability, than the resultant from the service of firms or individuals who are capable of giving cases entrusted to them their individual attention.

If the inventor prefers to entrust his invention to some firm who do a large business, he will find it to his best interest to place the same in the hands of **those long established** and not in the hands of a certain class who through the art of delusive and seductive advertising have, within the last few years, become established in the Patent business.

Of the latter class the inventor should particularly avoid those who offer premiums, prizes and other forms of humbuggery, including delusive statements as to the value of the alleged inventions submitted to them.

Regarding the many schemes and methods which have come into common use within the last few years, attention is called to the following statement forming part of the late Commissioner Butterworth's decision in the celebrated case of Ex parte Wedderburn, O. G. Oct. 5, 1897.

* * * "*It is well known that it is common for individuals, firms and corporations without having substantial, much less thorough, fitness for conducting the business they solicit, and without ordinary, much less exceptional, facilities*

How To Secure An Attorney.

for soliciting patents or selling them, and without knowledge of the value of invention, and without experience, to mislead and impose upon the uninformed and credulous by a system of advertising and newspaper laudation, supplemented by correspondence which has no higher aim or purpose than to filch money from persons who trust them and without reference to the quality of the service rendered.

In many of these cases the parties to whom I refer, in order to succeed, seem to have things and employ methods and agencies that **barely fall short** *of subjecting them to* **criminal prosecution**, *and in many cases they do violate the criminal statutes of the United States and of the several States, but unfortunately those who do the wrong seem to be above the power of the law, and the poor victims of the wrong appear to be beneath its care."*

"The readers (referring to the advertisements of the Wedderburn concern) were also assured in one of the pamphlet advertisements, and in other case by correspondence, that they would have advice as to the patentable nature of an invention or supposed invention **'free of cost.'**

This was another false and delusive statement."

(Attention is called to the information relating to—How to Obtain a Patent, page 10.)

Although the firm referred to above, was disbarred, and its business, which shortly before its disbarment was one of the largest in the country, has, it is believed, gone practically out of existance, yet the ear marks of the methods thereof still stand prominent as the leaders utilized by some other firms of like class, and it behooves the would be inventor before entrusting his business to any one, to carefully scrutinize all inducements, etc., placed before him, by various solicitors and others, before he concludes as to who is to conduct his case before the Patent Office Department.

No sensible person will entrust the search of a title to a land or other property deal, involving a large sum of money, in the hands of a novice; a second rate lawyer; or a patent medicine manufacturer; it is the service of a first-class lawyer who makes a specialty of such work as he desires done, to whom he should entrust such business.

How To Select An Attorney.

Considering that very often a single invention, sometimes of a most simple nature, if properly handled, is worth more than a dozen farms or fine city residences, the more is the reason why the inventor should be positive in properly selecting a competent patent attorney or solicitor to aid him.

Although many carefully and honestly prepared patents are secured and are being secured by some of the largest and long established patent solicitors firms, yet it is believed the inventor will find it to his best interest to entrust his case to some one who has an active business but of such character that he can give it personal attention, and to those who make **honest advice at the start and the best service afterward** their leader for success, and who are not compelled to replete their stock of dissatisfied clients by new ones gathered in by extensive and expensive advertising.

The inventor should remember that even in the selection of such a firm or person of the kind last mentioned, great discretion should be employed. He should if possible select one who is an expert both as to the drawing of claims and in the preparation of the Official Drawings (See article on drawings page.)

Furthermore, he should learn if the Attorney is particularly conversant with the art to which his invention may belong. For example, should the new invention refer to the art of tin manufacturing, the Attorney should be especially versed in the same. If in the line of Electricity Steam Engineering, Hydraulics, Pneumatics, etc., etc., the Attorney should be fully conversant with the several arts stated.

Patent Solicitors or Attorneys have special lines in which they are best informed, like the specialists who treat the different diseases of the body, although the Mechanical Expert and Attorney or Solicitor, when competent is generally informed on all the different lines of inventions which come before the Patent Office Department.

The inventor in selecting an Attorney sometimes is guided by the scale of fees charged by the different Attorneys and Solicitors. He should remember that those who offer to do the work cheap, as a rule, are those who cannot secure business on any other terms, and frequently find it difficult to get it **even at cheap rates.**

Professional service, when of an expert character in any line, usually commands good pay, and the inventor should therefore expect to pay reasonable charges for good service, always remembering that cheap service at the start is usually the most expensive at the finish.

How To Select An Attorney.

A Patent-Right Securer can be properly classed as one who knows practically nothing about the legal requirements necessary to secure patents; who could not prepare a Patent Specification if he tried: who has no experience as a Draughtsman; who cares not for his lack of these qualifications, so essential to properly secure a patent for a client, and who of necessity must turn over each and every item of business relating to the preparation and prosecution of patent applications, which is entrusted to his care, by the confiding and too credulous client, to others.

He cares not whether the claims of the Patent which he secures properly protects the inventor. He is in the business exclusively to make money fast, and as he usually lasts but a few years, he therefore finds it convenient to employ the cheapest kind of service.

It is well known that this class of concerns advertise the most vigorously and alluringly, and through correspondence usually impress the would-be-client that his invention is of a most valuable nature.

Of late years numerous concerns of this kind, the largest of which was closed by the Commissioner of Patents for extreme fraudulent practice, have sprung up and it is these concerns who advertise the most vigorously, promise the most generously, and give service mast sparingly. The inventor will find it to his loss to entrust his business to any of these concerns. The Patent Broker, Selling Agent, Promotor, etc., is referred to under the head of Patent Right Selling Agents.

Too much care cannot be taken by the inventor in the selecting of competent counsel The best plan, when it is found difficult to obtain information about a firm whom you contemplate favoring with your work, through regular business channels, is to request such a firm to furnish bona fide references of clients in your city, county or state, and after having received such names to write to such parties. As you will doubtless be called upon to pay advance fees, you should also satisfy yourself as to the financial standing of the firm to whom you desire to entrust your business.

If you hope to succeed and realize profit from your invention you should start right, and the right kind of start **is the placing of your business in the hands of some one competent, honest and reliable.**

YOU WILL NEED AN ATTORNEY

To prosecute your case before the department, and here rests one of the most important points essential to the success and protection of your invention.

Too much stress cannot be placed on the importance of the selection of the proper persons to handle the application and prosecution of your case..

An invention, no matter how meritorius it might be, may be rendered worthless to you in the hands of incompetent or unscrupulous attorneys.

Do not hesitate in the employment of your patent attorneys, for while you may be deliberating, some one, with possibly the same ideas, may get his application in ahead of you.

It is not absolutely necessary for you to wait until the entire completion of your invention before securing the intelligent services of able attorneys. Consult them and they will advise you.

BE CAREFUL.

See that the room in which you are to devote the time to develop your ideas is light and cheerful and devoid of any noises that might take your mind from your work.

If it is possible for you to do so, allow yourself to be entirely isolated and free from interference from any source that might interrupt you in your studies.

If a visitor should call, cover your drawings, for the cases are not infrequent that many a poor man has lost the chance of his lifetime by placing too much confidence in unscrupulous friends, who are only too eager to advance their condition in life through the brains of others.

Trust not too much in your friends, for they may betray you. Keep your thoughts absolutely to yourself until they are in condition to place before your patent attorneys.

Be careful not to place yourself at the mercy of unscrupulous patent attorneys.

IDLE MOMENTS.

In your idle moments, whether they be at home, in your workshop or in the field, think, study; perhaps something new unthought of may suggest itself to you that might ultimately place you and yours in independent positions for life.

If you be working in the shop, on the farm, or at your home, do you not know that some of the very tools that you are using and working with can be improved upon to lessen your labors? It is much easier to study some improvement on things we are familiar with, and coming in contact daily, than it is to suggest new ideas on something we are not familiar with.

If you follow a mechanical line, let some new tool or improvement to lessen labor be the subject of your consideration.

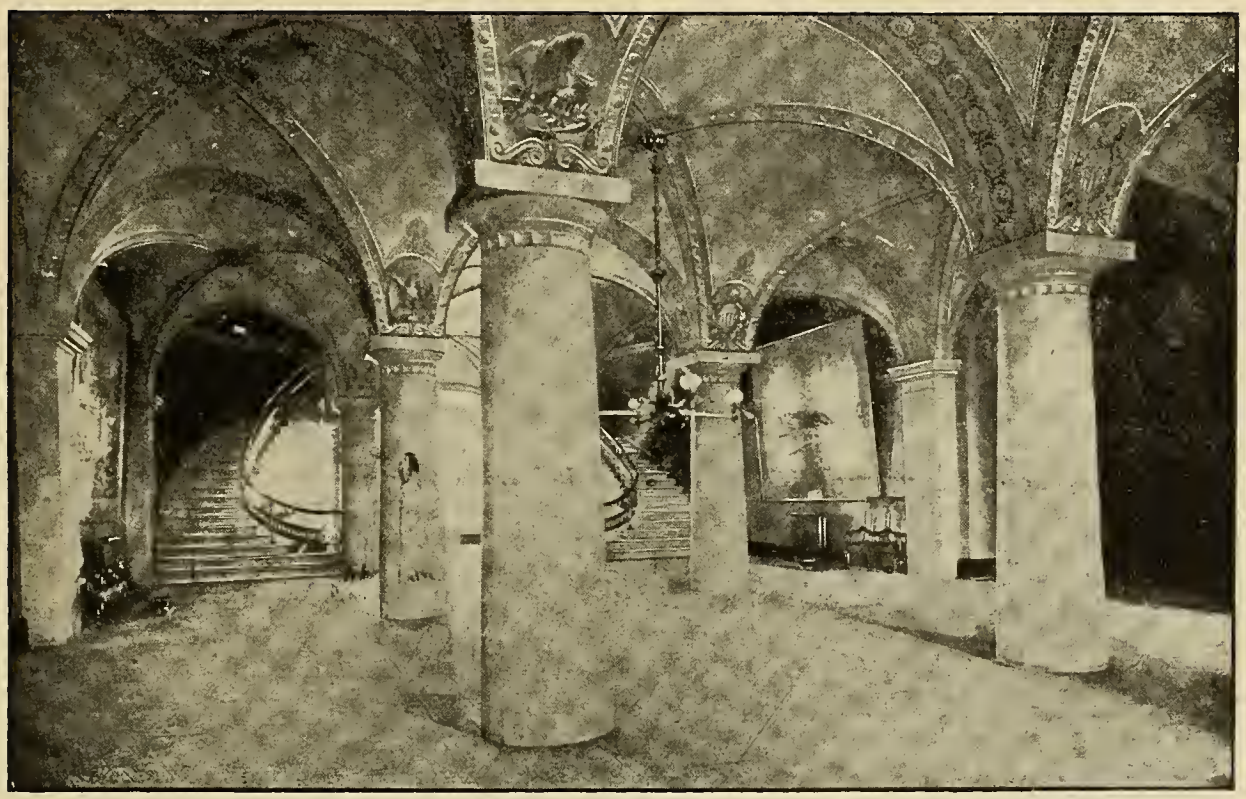
If you follow the farm for a living, study up some improvements among the agricultural implements you are daily handling.

If you are independent, and have no particular following in life, think of something that will lessen the toils of housekeeping duties.

If you are of scientific conception, let general improvements be the subject of your thoughts.

MODELS.

A model is not required by the Patent Office, but a clear rough model sometimes of a complicated invention showing the proper details, very often assists the attorney in arriving at a clear understanding in the shortest possible time. While it is not necessary to expedite matters, if the inventor has a model, he should send it to his attorney.



PATENT OFFICE LOBBY.

HOW TO SELL A PATENT.

The greatest error into which a large majority of inventors fall, particularly those who receive their first patent, is, that in having received the cherished official document with the "Great Red Seal," they form the conclusion that they are the possessors of something of great value.

The value of a patent lies not in the document itself, but in the monopoly of privileges granted to the creator of the new invention.

If the Patentee does not avail himself of the privilcges accorded under the patent, the patent, per se, will be of little or no value.

Having the patent, the Patentee may ask himself "How can I turn it to profit to myself and to others interested therein?" He need not long wait for advice. Before the beautiful seal on the face of the Patent losses its extreme brilliancy he is the recipient of letters, circulars, pamphlets, contracts, etc., of sufficient quantity to keep him guessing for some time, and it is at this point the patentee should take the time to consider carefully before forming definite conclusions as to what steps are necessary to proceed to turn his Patent to profit.

Every inventor is, and rightly should be, enthusiastic over his invention, and many are extremely so While under the flush of their enthusiasm, the patentee is, as a rule, considered good game for a certain class of patent selling agents, patent promotors, introducers, schemers and sharks of all kinds, who speedily come forward from all parts of the United States, Canada and Europe, with all kinds of schemes whereby they try to convince the patentee that they alone can place (for a consideration) in his hands the long coveted reward for his humble efforts in bringing forth to the world his new ideas.

At this point it is deemed proper to refer to a few remarks made by Assistant Commissioner of Patents Greely in his report in the celebrated Wedderburn case, O. G. 81, page 191 K:

"*The propriety of an attorney or solicitor of patents, combining the business of soliciting with that of selling patents is in my opinion, questionable. Doubtless it may be done honestly, but the respondent's methods are shown to be such as to sell the clients rather than their patents.*"

PATENT RIGHT SELLING AGENTS.

The idea of making patent-right selling a special business had its origin in the City of Washington in the year 1875. The writer was personally acquainted with the originator of the Patent-Right Selling business. He has given this subject more or less study during his twenty-five years continuous practice before the Patent Office Department, and from the many facts gathered by experience of his inventor friends, as well as personal, with many of the so-called Patent-Selling concerns, he is also of the opinion that it is the *Patentee and not the Patent that is usually sold by these concerns.*

The Official Patent Office Gazette is published weekly with the addresses of the inventors, and no sooner are the addresses printed than communications in various forms are mailed to the Patentees in the nature of Postal Cards, Letters, Circulars, Pamphlets, and very often complete contracts for the Patentee to sign.

The same kind of literature is sent to all of the Patentees, and the same offers and modes of procedure, how they propose to dispose of the Patent, are offered for the different classes of Patents. For example, the Patentee of an improved apparatus for Thawing Mining ground in the Klondyke regions, will receive the same literature, the same offers, and same modes for introducing and selling his Patent as the Patentee of an *Ice Making Machine.*

It is not denied that a person may successfully sell a Patent-Right, particulary some one with experience in the particular art to which the Patent he may undertake to sell, may belong, but it is the height of absurdity and a misleading trend to even make the claim, that any one can take up the promiscuous sale of all kinds of Patents that may be submitted to them.

Patent Rights cannot be sold like "sugar," although the Patentee is the "sugar" wherewith the Patent Right Seller fattens his pocket.

There are doubtless Patent Soliciting firms who make the sale of Patents a part of their business, who endeavor to conduct their business honestly, but many of them conduct the business under different names, and generally through correspondence, the wording of which is not only misleading, but is supplemented by advertising matter of striking ingenuity, though vaguely expressed, the whole purpose of which usually is the securing of the "*advance fee necessary to cover incidental expenses*" to start the sale of the Patent.

PATENT RIGHT SELLING AGENTS.

One of the worst and meanest features of the advertisements, and the suggestions made by some of the Patent Selling concerns, is the advice and information offered by them in reference to taking out Foreign Patents.

Again is quoted some of the remarks of the Commissioner of Patents on this subject:

*"This practice of advising clients to take out Foreign Patents has become a widespread and serious evil of the business of soliciting patents. It is notorious that there are numerous concerns throughout the country which make it a practice to urge not only applicants for patent, but even those who have taken out patents here, to apply through them for patents in Foreign Countries, with the full knowledge that such patents, though obtainable by reason of the fact above referred to, that in most Foreign Countries there is no examination as to a novelty preliminary to the grant of a Patent, would be necessarily invalid by reason of the issue of the Patent here. Many of these concerns do not attempt to practice before this office. * * * The attention of the Post Office Authorities should, in my opinion, be called to these concerns with a view to refusing them the use of the mails."*

Among the many methods employed by Patent Selling Agencies, the following are the most prominent:

As soon as the Patent is issued the Patentee receives a postal card, letter or circular, asking if his Patent is for Sale. The Patentee replying yes, and asking what will you give? receives in reply a finely worded letter and other literature, and probably an offer of a large sum for his invention. Sometimes the preliminary letters say—"We note your Patent No. * * * * * * and our expert says it should bring from $25 to $50,000 or more, as may suit the 'expert.'" If the Inventor writes again and places a price, he will likely receive a reply, that they "are effecting the sale, but the purchaser desires to examine the Patent as to its validity." The inventor is advised that this will involve an expenditure of at say, $30 to $40, of which the Selling Agent will advance one-half provided the Patentee will remit the other half. The search, if the fee called for is sent, is apparently made, and the Patent is declared to be invalid by the Attorney who examines the same, who is usually a part of the Patent Right Selling concern.

Another and very frequently worked scheme is to offer Land for State rights in a new invention. It is needless to say in such a deal the inventor is asked to pay a small sum to cover costs for examining title, conveyance, etc. The land deal is either a mythical one or of such character, that so far as value of the land is concerned it would be just as good at the bottom of the sea.

PATENT RIGHT SELLING AGENTS.

Contracts are frequently sent to the Inventor to sign and execute and return as quickly as possible as a purchaser is waiting. The Inventor sooner or later will be called on to pay $20 or more for incidentals.

Pay no money in advance to any of these concerns if you want to be on the safe side and don't be mislead by bank or other mercantile reference they may give. If they are honest they will give you the names of some bona fide clients in your county or state for whom they have sold Patents and received actual cash considerations therefor.

Another safe way to proceed is to have them submit all offers, etc., relating to a possible sale to the attorney who secured the patent for the Patentee.

Patent Selling concerns spring up like mushrooms and not a few must of necessity change their location or name by reason of complaints lodged against them.

Any agency that claims to sell patents on commission and obtains advance fees for alleged advertising, makes all of its profits out of the advance fees, for the reason that they do not sell the patents and hence can make no commissions.

To nullify the efforts of many of the sharks, and others, who so shamefully deceive the inexperienced Inventor, it has become the custom of many of the old-established Patent Attorney and Soliciting firms to give warning to their clients whenever they secure a Patent.

The following is a sample letter, such as is sent out by some of the patent firms to their clients, as soon as they receive their Patent.

A WORD OF WARNING AND ADVICE.

So many of our clients have been swindled by Patent Sale Agents, that we have decided to send this circular, warning inexperienced Patentees against their schemes. Old Patentees who have secured their second or twenty-second Patent, do not need warning. Many of them have been taught in the "school of experience" and this circular is not for them. It is particularly for the Patentee who has had his name published for the first time in the Patent Office Gazette, and is receiving tempting propositions from Patent Sale Agencies, who look upon a fresh Inventor as their prey.

HOW TO PROCEED TO SELL A PATENT.

None of these people can sell your Patent or do you the least good. You will throw away any money you may send them. Do not, as you abhor being duped, waste even so much as a postage stamp with them.

The Sale Agencies never sell Patents, they never try to sell them. They offer to sell your Patent for so much cash and a commission. Now, if you will not heed our warning and consign their circular to the waste basket, write them and offer instead of the cash in advance, 80 per cent. commission and see how quick they will leave you. By this you will see the "Agency" has no thought of selling your Patent. It would rather have $10 or $20 than a commission of 90 or 99 per cent. contingent on a sale. In other words, they do not value their prospective on your Patent at anything; they want only the $10 or $20 which they hope you may be foolish enough to pay them. We invite correspondence with all Patentees who have had experience with these "Sale Agencies" and Patent swindlers of all classes. We have called the attention of the Government detectives to a number of them, and we want all the evidence we can obtain. By sending us evidence of their effort or accomplishment to swindle, you will be doing a public service."

Now, after having explained to you—How Not To Proceed To Sell Your Patent Or Place The Same On Royalty--you might ask—How shall I proceed to dispose of the same at a profit to myself or to others interested therein?—This is best answered as follows:

It is impossible to define any method or system by which to proceed with all kinds of Patents alike. It depends largely on the character of the Patent and to the particular art to which it may belong. There are Patents which the owners thereof can dispose of from the smallest hamlet in the United States as well as from New York, Chicago or Washington, and there are others which only those directly connected with the largest and wealthiest corporations can hope to dispose of successfully.

The chances of successfully selling or placing a Patent so it will bring returns, depends largely on the character of the device, machine or process patented. Although a large majority of the Patents granted cannot be brought into practical use by any one, yet they may be of considerable value as a means for strengthening the protection for other patented articles, machines, etc., which are in practical use.

The Inventor will find it to his interest to begin his efforts to sell or introduce his Invention as soon as he finds, after filing his application, that his Invention is patentable and not wait for a final adjudication of the

same, for the reason that he should know as soon as possible whether his Invention is to meet with favor or disfavor and whether it is likely to supercede other things like it already on the market.

The first step, after having filed your application or secured your Patent, is to place yourself in communication with those in, and acquaint yourself with the necessities of that particular art, to which the Invention belongs. For example, if the Invention be an improvement in agricultural machinery, the Patentee should place himself in correspondence with, or better still if possible, personally visit Manufacturers in that particular line to which the Invention belongs.

At this point it is deemed proper to impress on the Patentee, that with few exceptions, if you cannot interest manufacturers or dealers who make and handle just such articles as the Patent calls for, it will be useless to attempt to interest others not engaged in such line. If you cannot personally call on the Manufacturers, write them and lay your Invention before them. Be patient, do not expect to realize large returns at once, but listen to the suggestion of the Manufacturer. If the Invention is a meritorious one, there will be more than one of the Manufacturers to whom the Patentee may write who will become interested, and when such a state exists, the Inventor can begin to be a little more exacting as to his demands as competition has been created between the Manufacturers. If the Invention admits of it, build a neat model, if not, be sure and send neat drawings and descriptions, and right here is where the value of first-class Patent Office Drawings becomes apparent. Do not make repelling demands.

It will be found best to submit these propositions: First. If interested in the Patent, will the Manufacturer make offer for entire or part interest in the Patent—or will he manufacture same on royalty, and if not willing to do either, at what price will he furnish the article or machine in quantities.

Thus, the Patentee will, through such correspondence, soon be made acquainted with facts that will determine whether his Invention will meet with favor or not. Of course, there are certain classes of Patents where this method of procedure would not be altogether desirable. For example, if the Inventor be situated in a progressive community where manufacturing forms a prominent part, and where capital can be easily interested and he has time to introduce or exploit his Invention, he may find it desirable to interest a small syndicate, say one or two friends who will purchase an interest at a price sufficient for the Inventor to

build his Invention and place it in actual use, with a view of organizing a Stock Company to build and introduce the same.

It has been said that Manufacturers as a rule turn down new Inventions for the reason that they tend to disturb their established business and line of machinery. This is not so, as it is not likely they would turn down something that some competitor might obtain and therewith revolutionize their business. No, they are more likely to obtain control of a Patent even if "to lock it up" to prevent others from having it. Manufacturers are live people, and they cannot stand in the way of progress, though some may try to impede it.

There are some classes of Patents which the Patentee can handle personally, such as novelties, simple contrivances such as household articles, smoker's devices, etc., at least sufficiently long until a demand has been created therefor; after this the sale of the Patent outright at a good price will be an easy matter. For examples: The dime saving banks; the hook and eye devices; pencil tip devices; cigarette formers; bicycle attachments; tool handles; coin cases; corset fastening devices; coin operated advertising novelties; simple electric devices; vehicle improvements; fences and fence post devices; improved tools, improvements in Fountain pens; Station Indicators; toys of all kinds; typewriting and cash register attachments, have been placed experimently on the market until their value was made apparent before Manufacturers bought them up.

The Inventor should not labor under the delusion that because he has received a Patent granting him a monopoly that he has the only good thing on earth. No matter how meritorious the Invention, unless you exercise reasonably good judgment and are expeditious in putting it on the market, you cannot hope for much success, because other minds are not asleep and better devices may soon appear. Be reasonable in your demands and do not lose hope. If you are inventively inclined and the first Patent fails, don't stop, improve—improve—go onward. After having made your second or tenth Invention you will often wonder how you proceeded so crudely with the first.

First-class mechanics gladly work eight hours a day for one year for $500 to $1,000. If you are naturally adapted to create new things readily, don't expect to earn a year's pay in an hour, at the start, but try and produce something of merit, and after having once done so, you will have little difficulty in interesting capital for any of your subsequent Inventions—as nothing succeeds better than success.

Patent Drawings.

The value and the validity of a patent often depends on the clearness and sufficiency of its drawings. There are thousands of existing patents in which the improvements are but partially or very poorly illustrated.

When it is considered that in the great majority of patents now granted models are rarely provided, or the invention produced in actual operative construction, it will be at once apparent, that unless the drawings clearly and positively bring out all of the novel features of the invention the patentee will find it extremely difficult to interest others in his invention.

In nine cases out of ten where the patentee meets with failure, when trying to interest manufacturers or capitalists, it is not so much the scope of the claims of his patent that repels investors as it is the vagueness, defects and inaccuracies of the drawings, which prejudice the manufacturer, or capitalist against the invention or patent, although the patent may have decided merit and value, and which might meet with a ready sale if the invention were fully portrayed by an artistic and skillfully executed drawing.

No inventor should permit his application to be filed in the Patent Office until he has seen a copy of the drawing illustrating his invention. Thousands of applications are filed annually in which the drawings are never submitted to the inventor, and, consequently many are deceived as to the manner in which their cases are presented.

The Official Drawings for an application for a patent should be complete, artistic, and mechanically correct, and should so disclose the invention that not alone those skilled in the art to which the invention appertains can understand it, but that the ordinary observer, particularly the manufacturer or capitalist, who must need to be interested to bring the invention into commercial use, may also understand it.

In former years it was sufficient if the drawing reasonably well disclosed the invention to the satisfaction of the Patent Office Examiner, who being usually an expert, could the more quickly comprehend the same, than others, especially so where a model accompanied the same.

Models are no longer required by the Patent Office and it is therefore essential that the drawings of an application be full and complete.

Patent Drawings.

The inventor must remember that the clearer, the more artistic and the more mechanically correct the drawings, in his patent the less difficulty will he encounter in making the same understood by the manfuacturer or capitalist whose conclusions frequently receive the initiative by the first occular impression of the invention. Often when the capitalist has no time or is not disposed to read up the description, if the drawing discloses the invention he is likely to become interested by a glance at the drawings.

Specifications in ordinary cases are sometimes dictated by the expert specification writer in less than an hour, but to properly execute a drawing the work must be slowly completed. Descriptive words can be read by different persons to have different meanings, but the drawing can be read only one way. It is for this reason that in many patent cases which have been heard in the United States Supreme Court, the scope or validity of the claims thereof have been determined by what is shown in the drawings.

Of late it has become the practice of some Attorneys or Solicitors, particularly those who vigorously advertise to do work cheap, to "farm out" their drawings to inexperienced or second rate draughtsmen who are willing to contract to furnish the drawings at a very low price, per sheet. First class Attorneys or Firms usually have skilled draughtsmen in their constant employ and it is such who furnish the higher class of work, as the draughtsman employed by them is not limited in time or expense.

Usually attorneys charge $5 per sheet for official drawings, for which some of them pay the draughtsman much less than one-half of such amount. For the price the inventor is called upon to pay, $5 for a single sheet of drawings, he should insist that first class drawings be made to accompany his application for a patent.

If the drawings of a patent fully, correctly and artistically disclose the invention, copies of the patent will serve as an elegant media for advertising the invention, and the cost will be very low, as the Patent Office Department will furnish copies thereof in quantities for 5 cents each.

WHITE HOUSE.

Decisions of the Courts and the Commissioner of Patents relating to Patents, Patent Applications, Assignments, &c., &c.

State License.

The Constitution of the United States provides for the protection of inventors. The laws enacted by States to prevent the free exercise of the privileges conveyed by a patent are unconstitutional, and hence null and void. (See *ex-parte* J. Robinson, U. S. Circuit Court, District of Indiana, May 30, 1870, and Helm *v.* First National Bank of Huntington, Circuit Court of Indiana).

In cases where the article manufactured effects the interest of a State directly, a license is necessary, as the manufacture of whiskey under a patent process.

Patentees Entitled to All Uses of Their Inventions.

A patentee who is the first to make an invention, is entitled to his claim for all the uses and advantages which belong to it, and it is immaterial whether he perceived and stated such advantages in his patent. (S. C. of the U. S., Stow *v.* the City of Chicago. Decided January 9, 1882.)

Aggregation Not Patentable.

A mere aggregation and bringing together of old devices or instrumentalities is not a patentable invention unless some new result is obtained. (S. C. of the Dist. of Columbia *Ex-parte* Fisher.)

Joint Invention Defined.

The mere suggestion, not acted upon by a person making it, but carried out and perfected by another, will not entitle the former to be considered a joint inventor. Nor is it necessary that exactly the same idea should have occurred to two persons at the same time, and that they should work out together the embodiment of this idea in a perfect machine to constitute them joint inventors. If an idea is suggested to one, and he even goes so far as to construct a machine embodying this idea, but is not a completed and working machine, and another person takes hold of it, and by their joint labors, one suggestion one thing and and the other another, a perfect machine is made, a joint-patent may be properly issued to them. If, upon the other hand, one person invents a distinct part of a machine, and another person invents another distinct and independent part of the same machine, then each should obtain a patent for his own invention. (Worden et al *v.* Fisher et al., 21 O. G., p. 1957.)

Patent-Right Liable for Debts of Patentees.

A patent-right may be subjected by bill in equity to the payment of a judgment-debt of the patentee. (Ager et al, *v.* Murray, U. S. S. C, Decided March 6, 1882.)

DECISIONS.

Estoppel.

Where a patentee has sold all his right, title and interest in, to and under his patents, and subsequently purchases an older patent, the assignee cannot, by such subsequent purchase, be dispossessed of the full benefit of what has been acquired from the patentee. (Curran *v.* Burdsall, 28 O. G.. p. 1319.)

Composition of Matter.

If several claims to a "composition of matter," though distinct, cover association of elements which contribute to the production of a single beneficial result, and do not fall under different classes, they, properly speaking, cover but a single invention, and hence may be included in the same application. (*Ex-parte* Hentz. 26. O. G., p. 437.)

Label.

The several acts of Congress regarding the registration of prints designed to be used as labels, do not exclude from registration a label containing matter which might be registered as a trade-mark; nor does the fact that a label bears such distinguishing marks as entitle it to registration as a trade-mark, exclude it from registration as a label if the owner desires it to be registered as such. Whether the Commissioner of Patents is to regard it as one or the other depends wholly upon the will of its proprietor. (Sewing Machine Co. *v.* Commissioner of Patents. 22 O. G., p. 1366.)

Oath of Inventor.

The statutory requirements of an affidavit by an applicant for an original patent is directory merely, and if it is irregular or omitted altogether the patent is not thereby vitiated. (Hartshorn *v.* Eagle Co., 25 O. G., p. 1191.)

Prior Publication.

Even without any description, if a published drawing fully and clearly exhibits and discloses an invention sought to be patented, it is an adequate and complete reference in itself alone. It is to be considered as a publication. (*Ex-parte* Borden, 26 O. G., p. 439.)

Process.

The omission of one step of the patented process avoids infringement, (Cotter *v.* New Haven Co., 23 O. G., p. 740.)

Sheriff's Sale of Patented Machine.

The rule that a purchaser at a sheriff's sale succeeds to the beneficial rights of the defendant in the execution to the property sold applies to the case of patented machinery, and whatever right to use a patented machine a defendant in execution may have passes with the sale.

DECISIONS.

Infringement of Patent by Joint Owner.

A part owner of a patent has no right to use an infringing device. If he does, he is liable to his co-owner for the wrong done.

When a part owner of a patent sues a co-owner for using an infringing device, the recovery, if any, will be in proportion to their respective interests. (Herring *v.* Gas Consumers' Association. U. S. Circuit Court. E. Dist. of Mo.)

Experimental Use and Sale.

The law permits an inventor to make practical test of his invention, and when an invention is used in public in the way of experiment or trial, or when a machine is sold on trial and warranted, it is not such a public use or sale as is contemplated by the statute. (Graham *v.* McCormick et al. U. S. C. C. for the Dist. of Illinois. Decided March 13, 1882.)

Invention of Employee.

Persons are not deprived of the right of their invention while in the service of others, unless they have been hired and paid to exercise their inventive faculties by their employers. (Hapgood et al. *v.* Hewitt. U. S. C. C. for Dist. of Indiana. Decided March 22, 1882.)

Assignments of Patents.

Assignments of patents are not required to be under seal. The statutes simply provide that "every patent, or any interest therein shall be assignable in law by an instrument in writing." (Gottfried *v.* Miller. U. S. S. C. Decided January 23, 1882.)

New Combination of Old Devices.

A new combination of known devices producing a new and useful result (as that of greatly increasing the effectiveness of a machine is evidence of invention, and may be the subject of a patent (The Webster Loom Co. *v.* Higgins et al, U. S. S. C. Decided May 8, 1882.

Priority of Invention—Public Use.

Of two original inventors, the *first* will be entitled to a patent unless the other puts the invention into public use more than two years before the application for a patent. (The Webster Loom Company *v.* Higgins et al. U. S. S. C. Decided May 8, 1882.)

Re-Issues.

In the matter of re-issuing applications, either for the purpose of expanding claims or correcting errors, the applicant must use due diligence in presenting an amended specification, and said amended specification should be for the same invention disclosed in the original

patent. *New matter* cannot be introduced therein. Two years from the date of the original application is usually considered "due diligence." (See Edward Miller & Co. *v.* Bridgeport Brass Company; James *v.* Campbell et al.: *v.* Claxton *v.* Campbell et al., and Campbell *v.* James at al., U. S. S. C., decided January 9, 1882; also Matthews et al. *v.* Boston Machine Company et al., U. S. S. C., decided March 27, 1882: Johnson et al. *v.* Flushing and North Side R. R., U. S. S. C. Decided May 8, 1882.)

The law authorizing the re-issue of patents was never intended to allow the scope of a patent to be enlarged so as to include and embrace within it matters and things that were not embraced in the original invention.

Any extension of the re-issued patent beyond the scope of the invention set forth and fairly indicated in the original specification, drawings, and model would be fatal to the patent itself. (The Swain Turbine and Manufacturing Co. *v.* Ladd. U. S. S. C. Decided December 13, 1880.)

Novelty—Great Utility of Invention.

The fact that an invention is of great utility and has gone largely into use, goes far to show that the inventor discovered and put to use what others skilled in the art had overlooked, and it would probably have been found out before if ordinary skill in that art could have discovered it. [Bruce *v.* Marden et al., U. S. S. C., So. Dist. of N. Y. Decided October Term. 1881.]

Construction of Patents—Specification and Claim.

The inventor cannot go beyond what he has claimed, and insist that his patent covered something not claimed, merely because it is found in the descriptive part of a speeification. (The Lehigh Valley R. R. Co., A. Parker, President, *v.* Mellon et al., U. S. S. C. Decided October 25, 1881.)

Acquiescence.

The patentee is not guilty of acquiescence for neglecting to proceed at once against all who infringe.

Firm—Title—Assignment.

The title of a patent taken out in the name of one of the members of a firm and never assigned to the firm, will not pass by sale of partnership property, although expenses incident to the issue of the patent are paid by the firm and the patent was used for the benefit of the firm while the partnership lasted. (McWilliams Manufacturing C., *v.* Blundell, U S. C. C., Dis., of R. I. Decided February 24, 1882.)

Trade-Marks.

Under the act of February 20, 1905, and the rules now in force, trade-marks, those used in inter-state commerce, in foreign commerce or commerce with the Indian tribes are registrable, and there has been no essential change in the law as to warrant the registration of a trade-mark which courts would not agree as such, except that under the present law, certain marks, not strictly common law trade-marks, can be registered if they have been in exclusive use for more than ten years prior to the act of February 20, 1905.

DECISIONS.

Under the present trade-mark act, the applicant is required to specify some particular States of the United States or some particular foreign country or Indian tribe with which he has commercial relations.

Right of Government to Use Patented Inventions.

The Government of the United States has no right to use a patented invention without compensation to the owner of the patent. (James *v.* Campbell et al., U. S. S. C. Decided January 9, 1882.)

Change of Old Device, Patentable.

A change made in an old device, which, though simple, is effective and produces new and useful result, held to involve the exercise of invention. (Sewing Machine Co. *v.* Frame, 28 O. G., p. 96.)

Infringement.

A structure embracing all the elements of the patented invention, and also an additional feature not found in the latter, constitutes an infringement of a patent. (Roemer *v.* Simon et al., 28 O. G., p. 154.)

Executors and Administrators.

It is clear that a patent-right, like any other personal property, is understood by Congress to vest in the executors and administrators of the patentee, if he has died without having assigned it. (Shaw Company *v.* City of New Bedford, 28 O. G., p. 283.)

New Use.

The application of an old process or machine to a similar or analogous subject, with no change in the manner of applying and no result substantially distinct in its nature, will not sustain a patent, even if the new form of result has not before been contemplated. (Penn. R. R. Co. *v.* The Locomotive Co., 27 O. G., p. 207.)

Sub-combination.

The fact that a device comprising several patentable elements has been patented as a whole, will not prevent the patentee from afterward securing a patent for a combination of any number of the elements less than the whole, provided he applies for it before the lesser combination has been two years in public use. (Cahn *v.* Wong Town On, 27 O. G., p. 299.)

Original Inventor.

When an inventor is first to enter a particular field of invention, the claim of his patent should be construed, broadly, to cover any similar apparatus which effects the same result in substantially the same manner. (Worswick Co. *v.* City of Buffalo. 27 O. G., p. 1239.)

DECISIONS.

State Licenses.

Property in inventions exists by virtue of the law of Congress, and no State has a right to interfere with its enjoyment, or to annex conditions to the grant.

If a patentee complies with the law of Congress, he has a right to go into the open market anywhere within the United States and sell his property. (*Ex-parte* Robinson, 4 Fish., 186; 2 Bliss., 309: Webber *v.* Virginia, 20 O. G., 369; Com. Decisions, 1881, p. 326; 103 U. S., 344: Wilch. *v.* Phelps, 25 O. G., 981; Com. Decisions, 1883: p. 489; 15 N. W. Rep., 361; 14 Neb., 134.)

The Distinction Between Use for Experiment and Statutory Public Use.

Use by the inventor of a machine in order to devise by experiment improvements upon the same to perfect it, is permissible, even where, as an incident, the product of the machine is sold; but where the use is mainly for trade and profit, and the experiments for improvements are incidental, then the principal and not the incident gives character to the use and the latter is a public use under the statute, and comes within its prohibition if it takes place more than two years before the application for the patent. (The Smith & Griggs Manufacturing Company *v.* Sprague, Administratrix, Supreme Court of the United States. Decided Nov. 14, 1887.)

Reduction to Practice.

It is still an unsettled question whether the embodiment of an invention in a construction capable of use, without actual practical use, will of itself secure to the inventor an indefeasible title as against other applicants who subsequently invent and properly reduce to practice the same device. If upon the completion and actual use either in public or in private of a machine or article of manufacture, the invention embodied therein becomes a successful experiment so as to entitle the inventor to a patent and to defeat the claim of a subsequent inventor without further action or diligence on the part of the first inventor, still the inventor does not pass absolutely from the domain of experiment until it has been actually used *in public. If forgotten before or after* such public use, it may be re-invented and patented by a subsequent inventor. If *abandoned before* such public use, it is an abandoned experiment and may be patented by a subsequent inventor. If *abandoned after* such public use, it cannot be patented by a subsequent inventor, but becomes the property of the public. (Mallet *v.* Cogger, 16 O. G., p. 45.)

Application for a Patent—Oath.

An applicant for a patent should make oath that his invention has not been in public use, or on sale in this country for more than two years prior to the filing of his application. (*Ex-parte* Rowan, 22 O. G., p. 1037.)

Prior Use—Unsuccessful and Abandonment Experiment.

A patent is not invalidated by proof that before the patentee's invention a device similar to the patentee's was temporarily in use, but proved a failure and was abandoned under circumstances indicating that it was no more than an unsuccessful and abortive experiment. To defeat a patent on the ground of prior use of the patented invention, it must appear that the anticipatory device was embodied in distinct form and was so far perfected as to be capable of practical use. (Allis *v.* Buckstall et al., 22 O. G., p. 1705.)

DECISIONS.

Who Are Liable to Infringement.

The only persons who can be held for damages for the infringement of a patent are those who own or have some interest in the business of making, using or selling the thing which is an infringement, and an action at law cannot be maintained against the directors, shareholders or workmen of a corporation which infringes a patented improvement. (Nickel *v.* Worthington, 23 O. G., p. 939.)

Design Patents.

Patents for designs have reference to appearence rather than utility; their object is to encourage the arts of decoration rather than the invention of useful products, but all regulations and provisions that are applicable to the pertaining or protecting of patents for inventions are, by section 4933, Revised Statutes, made applicable also to design patents. (Theberath *v.* Rubber Co., 23 O. G., p. 1121.)

Anticipation of a Design.

A design patent may be defeated upon proof that articles which revealed to the eye the same design which is the subject of a patent were publicly made and sold for more than two years before the application was filed. (Theberath *v.* Rubber Co., 23 O. G., p. 1121.)

Reissue Application.

Where on application for reissue, it affirmately appears from the applicant's own statement that the original application was not made and executed in accordance with the provisions of law, the original patent must be held to be invalid, and no reissue thereof can be granted. (*Ex-parte* Benton, 23 O. G., p. 341.)

Patent Void, Because of False Allegation of Joint Invention.

If a patent is issued to two persons as inventors, when in fact it was invented by only one, the patent is void. (Royal et al. *v.* Coupe, 39 O. G., p. 239.)

Patentable Novelty.

The Court finds that one element of the combination claimed in the patent in suit was new, and that the combination was useful, and determines that the invention was patentable. (Temple Pump Company *v.* The Goss Pump and Rubber Bucket Manufacturing Company et al., 39 O. G., p. 467.)

Driven Wells.

Re-Issued Letters-Patent No. 4372, granted to Nelson W. Green, May 9, 1871, for improvements in the methods of constructing Artesian Wells, declared invalid on account of public use more than two years before the date of filing the application for the original patent.

When the purchase or construction of the patented machine or article took place at a time more than two years prior to the application, whether with or without the knowledge consent or allowance of the patentee, the patent is invalid; and that is the effect of Section 24 of the act of 1870, and of Section 4886 of the Revised Statutes. (S. C. of U. S., Andrews et al. *v.* Hovey. Decided Nov. 14, 1887.)

DECISIONS.

Article of Manufacture.

An article of manufacture to be the subject of a patent must be new as such in the sense of the patent laws, and must be the result of invention. (MacKay et al. *v.* Jackman. 22 O. G., p. 85.)

Utility of Design.

The term "useful" in the patent law is used in contradistinction to mischievous." A design, if not mischievous, is useful if it is attractive. and the utility consists in such a shape or configuration of a given article that persons needing it will purchase it because of such shape or configuration in preference to other articles for the same purpose, but different in shape and configuration. (*Ex-parte* Norton, 22 O. G., p. 1205.)

When a Weight is Not an Equivalent of a Spring.

A weight to project the writing-pen not the equivalent of a spring for the purpose desired, the efficiency of the weight in this connection being impaired by its necessary confinement in a small working space and the necessary inclination of the pen from a perpendicular both when in use and out of use. (Cross *v.* Mackinnon, 22 O. G., p. 586.)

Changes in Adjustment.

The invention, if any, resides in the means employed to adjust the parts into efficient relations with each other in the new organization. (The Thatcher Heating Company et al. *v.* Burtis et al., 22 O. G., p. 262)

Superiority Not Patentable.

It is the invention of what is new, and not the arrival at comparative superiority or greater excellence in that which was already known, that the law protects as exclusive property and which it secures by patent. (Putnam *v.* Yerrington, 9 O. G., p. 689.)

Experinental Use does Affect Obtaining a Patent.

The experimental use of a machine more than two years before filing an application does not affect the right to a patent. (Chambers & Mendham *v.* Duncan et als. 10 O. G., p. 787.)

Prior Applicant Obtains the Patent.

The right of a prior applicant will not be prejudiced by reason of a patent being issued inadvertently to a subsequent applicant, and the burden of proof rests upon the latter in trial of interference. (Gordon *v.* Withington, 9 O. G., p. 1009.)

Anticipation.

A device which could not be used as a substitute for the patentee's invention without the exercise of invention is not in anticipation of it. (Crandall et al. *v.* The Parker Carriage Goods Company, 28 O. G., p. 369.)

DECISIONS.

A Bill to Cancel a Patent Cannot be Maintained in the Name of the United States.

The Court, adopting the conclusions of Judge Shepley, of the same circuit (Attorney-General *v.* Rumford Chemical Works, 2 Bann. & Ard., 298; O. G., 1062; C. D. 1876, 391,) are of the opinion that the Government, in the absence of any express enactment, has no power to bring a bill to cancel a patent. (United States of America *v.* American Bell Telephone Company et al. U. S. Circuit Court, District of Mass. Decided Sept. 26, 1887.)

Grant of a Canadian Patent.

The grant of a Canadian Patent is to be determined by its date of issue, and not by the time of its delivery. (Bate Refrigerating Company *v.* Gillett, 22 O. G., p. 1205.)

Applications.

When an application is once filed, be it a divisional or other original application, it presents a certain state of facts, and when examined on that state of facts the Patent Office has done all that is required, the applicant having received all that a single fee will cover. He may not shift from one state of facts to another and draw in extraneous matter, whether it be from an entirely independent source or from a divisional application. *Ex-parte* Holt, 29 O. G., p. 171.)

Labels.

While a person has the right to use his own name as a label on goods, he will not be permitted to use it in such a form or in such an arrangement with other words as to lead the public to suppose that the goods are those of another person who has the same name and has previously employed it in the same way to identify his goods. (Landreth & Sons *v.* Landreth, 29 O. G., p. 1131.)

Machine and Process.

A Patent may be valid for a process and another be valid for the means of carrying it on. (Phillips *v.* Koehert, 40 O. G., p. 1341.)

Patent Office—Power to Make Rules.

Congress in creating the Patent Office has by express legislation given that office the power to enact rules for its conduct. Those rules, if within the powers of the Office and reasonable, are just as authorative as the laws of Congress itself. (United States ex rel Horace Koechlin and Otto N. Witt *v.* Edgar M. Marble, Commissioner of Patents, 22 O. G., p. 1365.)

Process—Mere Operation of Machine.

The mere operation of a machine does not constitute a patentable process. It is not a chemical process nor any other for transforming the subject of it into another state. New *v.* Warren, 29 O. G., p. 587.)

DECISIONS.

Test of Identity of Design.

The true test of identity of a design is sameness of appearance; in other words, sameness of effect upon the eye of an ordinary observer, bringing to the examination of the article upon which the design has been placed that degree of observation which men of ordinary intelligence give. (Jennings et al. *v.* Kibble et al., 22 O. G., p. 331.)

Agregation and Not Patentable Combination.

Combination with one form of machine a device or element well known in other forms of machines of the same class—as arranging in a fire-place heater or a well known type a fuel receptacle common in ordinary cook stoves—is not broadly patentable. It is a mere aggregation of old devices, each performing its ordinary function in the ordinary way and not co-operating to produce any new result. (The Thatcher Heating Company et al. *v.* Burtis et al., 22 O. G., p. 262.)

When Suggestion Does Not Affect Inventor.

When a master-workman employing other people in his service has conceived the plan of an invention, and is engaged in experiments to perfect it, no suggestions from a person employed by him, not amounting to a new method or arrangement which in itself is a complete invention, are sufficient to deprive the employer of the exclusive property in the forfeited improvement. (Agawman Co. *v.* Jordan, 7 Wallace, 583.)

Inventor Not Bound After Expiration of an Agreement.

Parties engaging the service of an inventor under an agreement that he shall devote his ingenuity to the perfecting of a machine for their benefit, can lay no claim to improvements conceived by him after the expiration of such agreement. (Appleton *v.* Bacon & North, 2 Black, 699.)

An Inventor Cannot License and Use His Invention

A license to a person to use an invention only, "at his own establishment," does not authorize a use at an establishment owned by himself and others. (Rubber Co. *v.* Goodyear. 9 Wallace, 788)

Prior Publications.

Business circulars which are sent only to persons engaged, or supposed to be engaged in the trade, are not such publications as section 4886 of the law contemplates, and in a contest of priority will not afford a basis for a claim of prior invention as against a patentee. (New Process Fermentation Company *v.* Koch, 29 O. G., p. 535.)

Change of Machine.

Where a claim in a patent is for a certain arrangement of elements which perform a distinct and independent result in a machine, a change of these parts changes the patented arrangement, and the machine becomes *pro tanto* a new machine, and is out of the reach of the patent. (Reay *v.* Jones Envelope Company, 28 O. G., p. 370.)

DECISIONS.

Prints or Labels which are Not Trade-Marks are Registrable.

Only those prints and labels which are *not* trade-marks can be registered in the Patent Office: but trade-marks can be registered as such, and afterwards a print or label embodying such trade-mark can be registered. (W. Simpson & Sons, 10 O. G., p. 333.)

To Infringe a Patent it is Not Necessary to use Entire Construction.

To infringe a patent, it is not necessary that the thing patented should be adopted in every particular. If the patent is adopted substantially by the defendants they are guilty of infringement. (Sewel *v.* Jones et al., 9 O. G., p. 47.)

Change of Position Patentable.

Transferring the point of applying the lifting force of a spring from a point behind the forward end of the beam to an arm on the coupling, to which the beam is pivoted, *held* to involve patentable invention. (The Brown Manufacturing Company *v.* Deere & Co., 28 O. G., p. 1187.)

When Aggregation is Not Anticipated.

Where a claim does not cover a mere aggregation of separate elements, and there is not shown a mere mechanical juxtaposition, but each one of the elements of the claim contributes to the combined result which is due to the joint and co-operating action of all of them, the claim is not anticipated by showing that certain of its individual parts are old. (Sessions *v.* Romadka et al., 28 O. G., p. 721.)

Use of Patented Articles.

The purchase of a patented article from the patentee confers upon the buyer the right to use the article to the same extent as though it were not the subject of a patent, but the sale does not import the permission of the vender that it may be used in a way that will violate his exclusive property in another invention. (Roosevelt *v.* Western Electric Company, 28 O. G., p. 812.)

Title to Patent.

The title to a patent taken out in the name of one of the members of the firm, and never assigned to the firm will not pass by sale of partnership property, although expenses incident to the issue of the patent were paid by the firm and the patent was used for the benefit of the firm while the partnership lasted. (McWilliams Manufacturing Company *v.* Blundell, 22 O. G. p. 177.)

Re-Issue.

Where it can be seen that the patentee seeks by apt wards of description to secure what he has honestly invented and nothing more, the court should hesitate to regard with favor the accusation now so freely made against re-issued patents. (Crandall et al. *v.* The Parker Carriage Goods Company, 28 O. G., p. 369.)

Attorneys Charges.

It has been the custom for many years, for regularly established attorneys and patent soliciting firms, particularly those doing a large business, to have what is known as a fixed scale of charges, particularly applicable to the ordinary run of cases, meaning those of a simple character in which the mere assemblage of new mechanical structures is involved.

Of late years the fixed charges of different firms has varied somewhat, generally from $25 to $40 Attorney's Fee for simple inventions, meaning those which can be usually illustrated on one sheet of Official Drawings.

These charges are indeed moderate enough when the service rendered in return therefor is of an expert and honest kind, but for service such as is furnished by many of the "cheap kind" of attorueys or solicitors, the said charges are exorbantly high.

When it is considered that more than six hundred thousand (600,000) patents have been granted, it will be manifestly clear that to properly prepare and prosecute a patent case now, requires more skill, energy and persistent efforts on the part of the attorney or solicitor, than was necessary some years ago when the number of patented inventions was much less.

Do not allow yourselves to be caught by the bait of cheap prices, Cheap fees means cheap work.

To avoid dealing with triflers, many first-class patent soliciting firms find it necessary to make the iron clad rule of requiring from $20 to $25 advance payment on new cases before they will proceed with the business.

Attorneys are justified in doing this, as too often inventors, either for want of money for fees, or by reason of abandonment of their inventions, fail to pay attorneys their charges after they have faithfully attended to the preparation of the necessary drawings and specifications for the application.

This rule, however, is not always insisted on by attorneys who feel confident that they can furnish satisfactory service and when the client is well known to them or he can give satisfactory references as to his financial standing, integrity, etc.

Attorneys Charges.

The inventor should deal honestly with his attorney if he expects to receive honest service in return. He should, however, before paying the attorney his full fees, insist that all the official specifications, together with copies of the complete official drawings be submitted to him for his examination and approval that he may become fully conversant with the same before they are filed in the Patent Office Department, for the reason, that the Patent Office rules positively prohibit the making of any changes or addition in the construction of mechanism described in the application after it has once been filed for examination.

As a rule most of the attorneys ask an advance or retainer fee and the payment of the balance of their fee before the application for a patent is filed in the Patent Office Department, while others do business on what is commonly called the "NO PATENT NO PAY" plan. That is. the Attorney's fee is made contingent upon the success of securing the allowance of the patent.

Opinions as to whether a client would be best served by an Attorney who is to receive his pay when his service is finished, or by one who receives his pay in advance, differ. If an attorney is not honest and competent paying him the fee in advance or contingent upon success will not make him so, but it is obvious that an Attorney cannot be expected to exert his best efforts for a client when the payment of his fee is of considerable doubt.

That this is true is evidenced by the rule now made by those who do their business on the "NO PATENT NO PAY" plan, which rule requires the inventor who entrusts his case to them to deposit the amount of the Attorney's Fees in a bank payable to the order of the Attorney when the Official Notice of allowance of the patent is presented to the bank holding the deposit.

It is manifest that the inventor must raise as much fee money before filing his case with the "NO PATENT NO PAY" attorney as with the attorney who compels the inventor to pay all fees directly to him instead of depositing part of the same in a bank.

Attorneys Charges.

Any firm having a very large clientage and an active business can without doubt give first-class and honest service on the contingent plan, and that there are firms working on this plan who endeavor to give their clients honest and expert service is acknowledged by those whose judgment is not biased by blind professional predjudice, but it is deemed proper to add that some firms doing business on the "NO PATENT NO PAY" plan do exist who engage cheap and inexperienced employees and whose anxiety to draw fees at the earliest moment makes them indifferent to the interest of securing the broadest possible patent: the interests of their client being often subordinate to the single idea of getting the patent quickly.

The inventor should always remember that he has to depend solely on the claims of his patent for his protection. It therefore follows that if a patent is not drawn up by an honest and competent attorney, his chances for realizing on his invention will be few indeed.

It matters very little if the attorney you employ asks for his fees in advance or requires you to deposit same in a bank to be paid him after he secures you a patent if he has not the necessary acquirements to secure you a complete monopoly for your invention.

You should remember that an attorney possessing the necessary requirements to secure you a good and valid patent is not likely to work for nothing. **He expects good pay; usually gets it,** and for return generally obtains for his client **broad patents which have a commercial value.**

FORMS OF ASSIGNMENT.

Every first-class Patent Attorney or Solicitor has, or should have, means for furnishing his clients the names of any and all the Manufacturers who make articles like the client's Invention, and as a rule attorneys cheerfully furnish said names to their clients and freely advise them as to what steps are necessary to consumate a deal and when requested prepare the necessary transfer papers.

If the Patentee's attorneys refuse to do this freely it is about time the Patentee changed attorneys.

Anyone having a new idea not able to push it should try and interest a trustworthy friend or capitalist who will advance money sufficient to patent the Invention and exploit the same, but before doing so the Inventor should build a neat model, or if this is not possible, have a neat illustration and description made of the same by a competent Draughtsman or Attorney. Do not attempt to interest anyone in a new idea with an incomplete, crude, inoperative, and inexpressive exhibit. If you do you are likely to repel rather than interest those whose assistance you may want.

As an aid to those who desire to sell all or part of their Invention before or after patented, or who wish to place their Patent on royalty or under license, the following blank forms are given. These are generally used for the Patent Office Department. Whenever an assignment for a filed application or Patent is made, the same should be sent to the Commissioner of Patents at Washington, D. C., together with $1 fee for recording. To be valid as against a third party the assignment should be entered within three months from the date of its execution.

No. 1—AGREEMENT TO ASSIGN.

Whereas; I, ..., of ....., County of....., State of ....., have invented a new and improved ....., for which I intend to apply for Letters Patent in the United States; and

Whereas, ..., of ....., in the County of ....., State of ....., has advanced and paid over to and for me the sum of ..... dollars for maturing and perfecting my invention, and as part payment on account of expenses for securing a Patent thereon.

FORMS OF ASSIGNMENT.

Now, therefore, be it known that I, the aforesaid ....., do hereby agree, and it is intended, that this instrument serve as binding me to assign over to the aforesaid ....., his heirs or assigns, an undivided ..... interest in my invention and the Letters Patent to be secured therefor.

I also agree, and also bind myself, to use all diligence in taking the proper steps to make an application for a Patent for my aforesaid invention, to sign any and all necessary assignment papers, to properly record in the Patent Office Department such transfer of my interests to the aforesaid .....

In the presence of

.... SEAL.

No. 2—ASSIGNMENT BEFORE PATENT.

Whereas; I, ..., of ....., County of ....., State of ....., have invented a new and improved ....., for which I am about to make application for a Patent in the United States, and for which I signed and executed specifications on the ..... day of ....., 1899; and

Whereas, ..., of ....., the County of ....., State of ....., is desirous of acquiring an interest in and to the aforesaid invention and the Letters Patent when granted therefor.

Now, therefore, be it known that for and in consideration of one dollar ($1) to me in hand paid, the receipt of which is hereby acknowledged, I, the said ....., have sold, assigned, and by these presents do sell, sign, and transfer unto the said ....., his heirs and assigns, ... of my entire right, title, and interest in and to the aforesaid invention, and in and to the Letters Patent that may be granted therefor in the United States, the same to be held and enjoyed by the aforesaid ....., for his own use and behoof, and for the use and behoof of his legal representatives, to the full end of the term of the said Letters Patent, as fully and entirely as the same would have been held and enjoyed by me, had this assignment and sale had not been made.

FORMS OF ASSIGNMENT.

I hereby authorize and request the Commissioner of Patents to issue the Letters Patents in accordance with the terms of this assignment.

Witness:..... ..... SEAL.

Sworn to and subscribed before me, a Notary Public, this ..... day ....., 1899.

[SEAL.] .....

Notary or Justice Sign.

No 3.—ASSIGNMENT AFTER PATENT.

Whereas; I, ..., of ....., in the County of ....., State of ....., did obtain Letters Patent in the United States for an improved ....., which Letters Patents are nnmbered ....., and bear date ..... 18.....; and whereas I am now sole owner of the said Letters Patent; and

Whereas, ..., of ....., County of ..... and State of ..... is desirous of acquiring an interest in the said Letters Patent;

Now, therefore, to all whom it may concern. be it known that for and in consideration of ($1) one dollar to me in hand paid, the receipt of which is hereby acknowledged, I the said ....., have sold, assigned, and transferred, and by these presents do assign, sell, and transfer unto the aforesaid..... ....., part of my entire right, title, and interest in the aforesaid Letters Patent; the same to be held, and enjoyed by the said ....., for his own use and behoof, and for the use and behoof of his legal representatives and assigns for the full term of the Letters Patent, and as entirely as the same would have been held and enjoyed by me, had the assignment and sale not been made.

I testimony whereof, I have hereunto set my hand and affixed my seal at ....., County of ..... and State of ....., this ..... day of ....., 1899.

Witness:

.... SEAL.

Sworn to and subscribed before me, a Notary Public, this ..... day of ....., 1899.

[SEAL:] .....

Notary Sign.

U. S. STATE, WAR AND NAVY DEPARTMENT.

DIETERICH'S

50

PERPETUAL MOTIONS.

TEXT AND PLATES COPYRIGHTED
1899-1906.

PERPETUAL MOTION.

The solution of Perpetual Motion apparently still captivates those who believe in the possible successful solving of such a machine, though the vain efforts of centuries have done nothing beyond showing failure and the wanton waste of energy and money from its votaries. That this Will-o-the-Wisp is still being pursued is evidenced by the continuous so-called new discoveries which are launched with great regularity as the "Eureka" of some mechanical mind.

From a continuous experience of more than twenty-five years in the Patent Grist Mill the writer is led to believe the problem of Perpetual Motion has at some time been seriously considered by many minds of more than ordinary mechanical development, even if but to a very limited degree, and though the careful student and close observer quickly brushes aside this **chimera** for something more tangible, unfortunately often those with mechanical ingenuity of such high order if applied to other mechanical lines in which new improvements are always in demand might with little difficulty land themselves in the lap of luxury, still persist in hammering away at this phantom billet, producing "new" mechanical mixtures of "this and that," which are but repetitions of the identical principles and ways ancient when Solomon the Wise said, "There is nothing new under the sun."

It is not intended in this brief article on Perpetual Motion to dig deep into the scientific **whys** and **wherefores** thereof, but to make clear, if posible, how utterly hopeless all efforts in this line have been and are likely to be, so as to divert the attention of those who are giving this subject study to other and more profitable channels and save them a needless expense and waste of time.

During the past few years articles have appeared from time to time in newspapers and other periodicals stimulated to some extent by unscrupulous Patent firms, Brokers, etc., that the United States Government had offered a premium of a large amount for a practical Perpetual Motion Machine. This is not so. The United States Patent Office has not authorized such offer nor has any other Department of the United States Government, and that the Patent Office Department does not encourage the study of this problem is evidenced by the fact that whenever an application for a patent for Perpetual Motion is now received by said Department the application, together with the fees paid thereon, are returned to the applicant.

PERPETUAL MOTION.

Often attorneys (after honestly advising their clients that patents cannot be secured for Perpetual Motion) are importuned and requested to file applications for Perpetual Motion Machines under some other title to get the case before the Patent Office Examiner for action. This course while frowned upon by many in reality in the end serves the inventors' best interests, as an official letter from the **Patent Office Department** setting out that the invention is for an **inoperative mechanism** and the same cannot be considered further until a **working model** is filed, does more to bring the inventor to a proper realization of the hopelessness of his efforts than all the advice his attorney and friends can possibly offer, and, as a rule, stops his further efforts and wanton waste of mental energy and cash.

The term "Perpetual Motion" is in reality a misnomer. As so far as can be seen there is no single motion in nature that can be called perpetual, though change is perpetual and motion somewhere must always exist.

The term "Self Mover" better covers the motion of which visionaries have dreamt and for which enthusiasts still labor, and is supposed to be a machine which, under ordinary circumstances, will *start itself, overcome the resistance of air and friction, and possessing a surplus of motion sufficient to propel other machines not self-movers.*

Why is Perpetual Motion impossible?

Whether a self-mover capable of communicating motion without losing in power that which it gives off or communicates, will in the future become an accomplished fact, is something which the future alone can determine, but under the existing state of things there is but one conclusion as to Perpetual Motion, and that is, to produce such a motion is an impossibility, and why may be briefly stated as follows:

The resistance of air and friction incessantly retards motion. In order that any motion whatever should be perpetual (continuous for an indefinite time) it must be maintained or kept up by some external cause, but as nothing gives that which it does not possess, the generating force cannot give the machine a greater amount of motion or power than that which it itself has.

The question of Perpetual Motion is reduced to the finding of a weight that is heavier than itself or an elastic force having a greater elasticity than it possesses—an absurd proposition.

PERPETUAL MOTION.

No item of energy in the universe ever perishes, nor is any item of energy ever added to the existing supply; the only changes possible being those of transformation of energy from one form to another. Thus, heat energy may be developed from electrical energy or from mechanical energy, but for every unit of heat energy developed an exact equivalent of the other form of energy must disappear.

Energy can take all shapes, but must leave one to assume another. It can only transform and in nowise multiply itself.

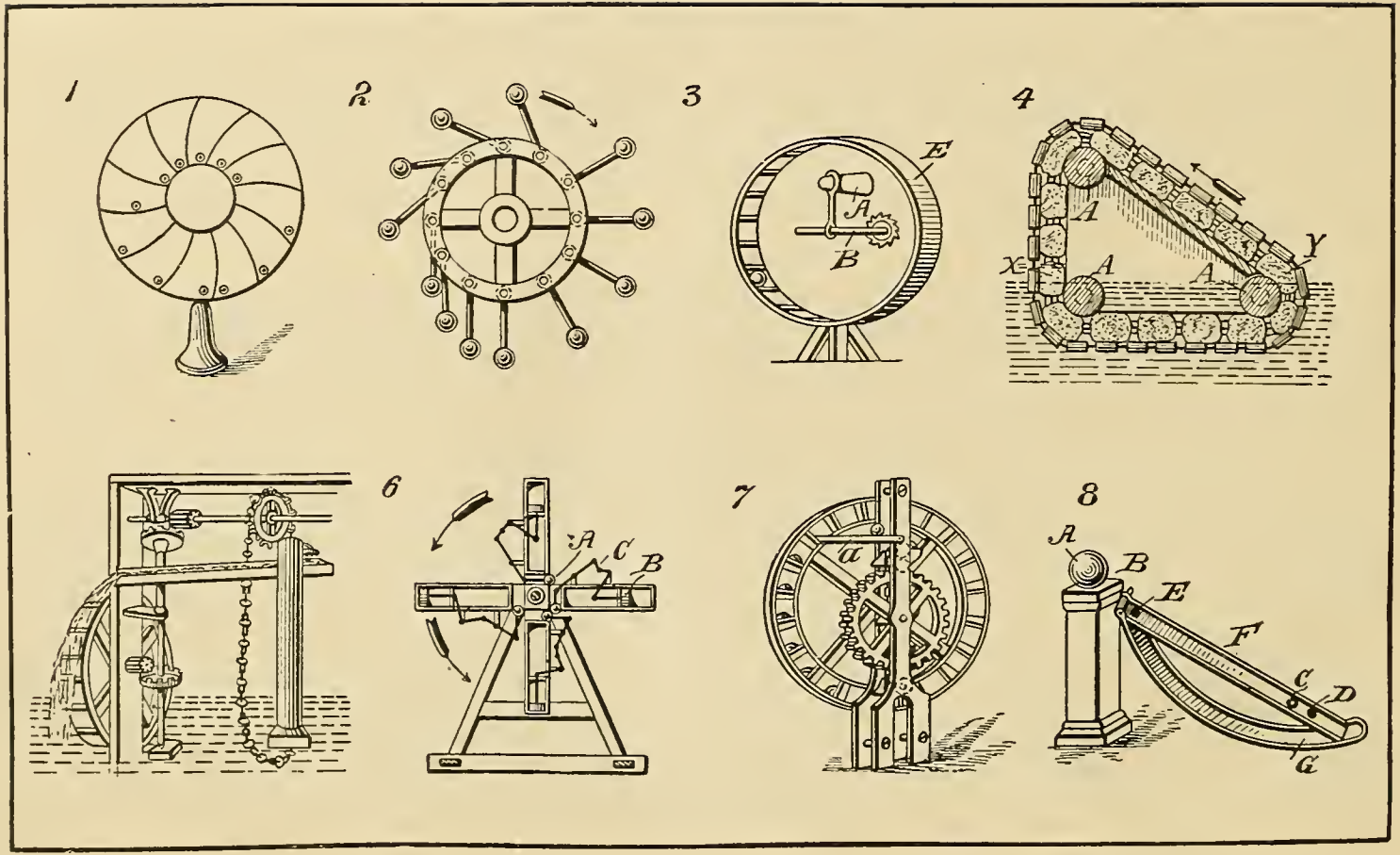
It is just as impossible to create energy as to create matter, and any method which has for its object to get out of a pound of coal more energy than said pound of coal is known to possess should be regarded precisely equivalent to the claim that ten chairs could be made into eleven or more by some special grouping.

It is often contended by the would-be solver and student of Perpetual Motion that had fifty years ago the question been asked, Can the sound of human voice be made to repeat itself from ocean to ocean? such query would have been considered equally absurd as the solution of Perpetual Motion.

While it is true that man cannot forecast the future nor prophesy the possibilites thereof, yet all things so far produced of the wonderful kind have been the mere transformation of energy into different forms by scientific methods and means which, in creating such energy transformations, has taken from one source just what it has added to the other.

Many problems and theories regarding Perpetual Motion have been advanced which on their face make their operativeness appear positive and clear to the average mind, and it is true that in many instances it is quite difficult to explain to the uninitiated wherein the reasoning regarding such problems and theories are at fault, but whoever has a general knowledge of the true principles of mechanics does not hesitate in the conclusion that inventors of Perpetual Motion would find it quite difficult to lift themselves by their own boot straps.

Reductio ad absurdum.


1
2
3
E
A
B
4
A
A
A
X
Y
5
6
A
C
B
7
a
8
A
B
E
F
C
D
G

PERPETUAL MOTION.

The following descriptions relate to various forms of Perpetual Motion Machines invented from the fifteenth century to the present time. The great similarity of machines invented hundreds of years ago with those of very recent origin will be readily apparent:

No. 1 of the illustrations represents one form of motion invented in the sixteenth century and is commonly called the Marquis of Worcester Wheel. The idea is that the centre of gravity constantly changes, by reason of the balls moving out by centrifugal force at one side from the axis of the wheel, as others on the opposite side move toward such axis. It must be observed at a glance that this wheel can only be continuously turned by external force. This principle of changing weights is yet being experimented with by solvers of the motion . . . . . **No. 2** illustrates a wheel involving the changing of centre of gravity principle. In this form the wheel is equipped with equal distantly spaced levers pivoted to the circumference of the wheel, each having a weight at the outer end, the several levers so pivoted or hinged to the wheel that in one direction they can rest on the wheel rim, while on the opposite side, being swung out by centrifugal force they arrange themselves eccentrically of the axis and in consequence supposed to rotate the wheel in the direction indicated by the arrow. Notwithstanding this apparent operative wheel it will not work for the reason that at all times the centre of gravity of all the weights is in a vertical plane passing through the point of suspension and therefore the wheel must stop as the weight of gravity at each side is balanced.

Substantially the same principle is involved in the motor shown by **No. 16,** which represents a device patented by one Charles Batcheller of Iowa, dated 1870. His patent states, "I create by a system of levers, weights and gearing a compound power, perfectly balanced when at rest, * * * after being started, it accumulates power much more rapidly than an ordinary balance wheel, * * *. In addition to gain in power I also gain an increase of speed. While my compound lever makes one revolution, the inside shafts and wheels make two revolutions." For the reason stated in regard to motion **No. 2,** motion **No. 16** fails to work.

Illustration **No. 21** illlustrates a device by Doctor Alois Drasch, of St. Egidi, Austria, patented in the United States December 22, 1868.

PERPETUAL MOTION.

"This invention consists in the arrangement of an annular tilting tray, which forms the orbit of a revolving ball, in combination with a supporting platform, and with a lever which extends into the tray and connects with a shaft, to which motion is to be imparted, in such a manner that, by continually changing the position of the tray, the ball is caused to rotate therein without interruption, and by the action of the rotating balls on the lever the desired motion is imparted to the shaft, which connects with the working or mechanism to be driven.

A represents a tray, which forms an annular path, or orbit, for the ball, B. This is made of sheet metal, or any suitable material, and its diameter is about four times that of the ball, B. It is supported in its center by a rod, which connects by a ball and socket joint, C, with a platform, D, so that said tray can be readily tilted in any desired direction. From the edge of the platform, D, rises a circular rim, E, which prevents the tray from being tilted any lower than desirable. The position of the tray is governed by a hand lever, F, which enables the operator to continually tilt said tray in advance of the rotating ball, so that said ball is kept rolling on a continually changing incline plane; and, as the ball progresses in its orbit, it bears on a lever, G, which extends from the shaft. H, into the tray, as shown in the drawing. The tray is guided in its motion by an arm, I, which is firmly attached to its circumference, and catches in a loop, J, secured to the edge of the platform, D. The shaft, H, is intended to transmit the motion, imparted to it by the action of the ball, B, to the working machines, or to a machanism of any desired construction.

"In the drawing, my motor is shown as applied to propelling a railroad car, or vehicle, and in this case the shaft, H, bears a bevel wheel, K, which gears into a similar bevel wheel, L, mounted on the axle of the car, or vehicle, so that the rotary motion imparted to the shaft, F, will be transmitted to the axle of the car, or vehicle, and the desired motion of said car, or vehicle, will be effected. It is obvious, however, that my rotary ball motor is applicable for the purpose of driving machinery of any kind, and it is particularly valuable in localities where the erection of a steam engine, or other motor, would be difficult and impracticable."

As an illustration to show that Perpetual Motion was seriously considered in ancient as well as modern times by men of great mechanical and scientific skill, the following is reproduced.

In a work entitled "A History of the Manual Arts." we find the following:

"Archimedes, of Syracuse, the greatest mathematician and the rarest engineer that was in his time, invented a

sphere and an artificial heaven, wherein he did represent the rotations and revolutions of the planets," and of which Claudian gives a poetic description—"that this machin did move of itself; it was an automaton, a self-moving device;" and further, "that these motions were driven and acted by certain spirits pent within;" also of another device of "a silver heaven sent by the Emperour Ferdinand for a present to Soliman the Grand Segnior," with twelve men, and a book "that shewed the use of it, and how to order and keep it in perpetual motion." An account is next given of Cornelius van Drebble, a Dutchman, of Alcmar, engineer to King James of England:

"He presented the king with a rare instrument of perpetual motion, without the means of steel, springs, or weights; it was made in the form of a globe, in the hollow whereof were wheels of brass moving about, with two pointers on each side thereof, to proportion and show forth the times of dayes, moneths, and years, like a perpetual almanack."

Illustration No. 5, refers to a form published in a work by one Robert Fludd—printed in 1648.

It is a water wheel which is expected through a system of gearing to operate a chain pump, which pump should raise the water necessary to propel the wheel, and so on forever. It is probably unnecessary to inform the readers that this fallacious principle has been tried in various ways, and that there are occasionally yet to be found those so unskilled in mechanical science, and incapable of seeing the radical error of the device, as to waste their substance in a repetition of this time honored blunder. We have now in mind an instance in point, in which a man spent the accumulation of an industrious life in endeavoring through various makeshifts to get such a wheel to move, and who has brought poverty upon his declining years, through his absurd experiments. It was earnestly sought by his friends to convince him that nothing in falling could perform more work than that required to raise it to the point from which it is allowed to descend, but all such efforts proved vain, and our perpetual motion seeker would not desist till he had sunk his bottom dollor. "Perseverentia vincit omnia" was his reply to every argument and appeal, a motto which perhaps is true when applied to possibilities, and the failure of which in all the attempts to secure a self-mover only strengthens the belief in the impossibility of the thing sought.

John Wilkins, Bishop of Chester, who died in 1672, during his life wrote on this subject and in referring to discoveries made at his time, and touching particularly on that class depending on "magnetic virtues" exemplified by the device illustrated by Figure No. 8, says:—

"But amongst all these kinds of inventions, that is most likely, wherein a loadstone is so disposed that it shall draw unto it on an inclined plane a bullet of steel, which steel, as it ascends near to the loadstone, may be contrived to fall down through some hole in the plane, and so to return unto the place from whence at first it began to move; and, being there, the loadstone will again attract it upwards till coming to this hole, it will fall down again; and so the motion shall be perpetual, as may be more easily conceivable by this figure:

"Suppose the loadstone to be represented at A B, which, though it have not strength enough to attract the bullet, C, directly from the ground, yet may do it by help of the plane, E F. Now, when the bullet is come to the top of this plane, its own gravity (which is supposed to exceed the strength of the loadstone) will make it fall into that hole at E; and the force it receives in this fall will carry it with such a violence into the other end of the arch, that it will open the passage which is there made for it; and by its return will again shut it; so that the bullet (as at the first) is in the same place whence it was attracted, and, consequently, must move perpetually."

But however this invention may seem to be of such strong probability, yet there are sundry particulars which may prove it insufficient: for

"This bullet of steel must first be touched, and have its several poles, or else there can be little or no attraction of it. Suppose C in the steel to be answerable unto A in the stone, and to B; in the attraction, C D must always be directed answerable to A B, and so the motion will be more difficult; by reason there can be no rotation or turning around of the bullet, but it must slide up with the line, C D, answerable to the axis, A B.

"In its fall from E to G, which is motus elementaris and proceeds from its gravify, there must need be a rotation of it; and so 'tis odds but it happens wrong in the rise, the poles in the bullet being not in the same direction to those in the magnet; and if in this reflux it should so fall out, that D should be directed toward B, there should be rather a flight than an attraction, since those two ends do repel, and not draw one another.

"If the loadstone, A B, have so much strength, that it can attract the bullet F, when it is not turned around, but does only slide upon the plane, whereas its own gravity would rowl it downwards; then it is evident the sphere of its activity and strength would be so increased when it approaches much nearer, that it would not need the assistance of the plane, but would draw it immediately to itself without that help; and so the bullet would not fall down through the hole, but ascend to the stone, and, consequently, cease its motion; for, if the loadstone be of force enough to draw the bullet on the plane, at the distance F B, then must the strength of it be sufficient to attract it immediately unto itself when it is so much nearer as E B. And if the gravity of the bullet be supposed so much to exceed the strength of the magnet, that it cannot draw it directly when it is so near, then will it not be able to attract the bullet up the plane, when it is so much further off.

"So that none of all these magnetical experiments, which have been as yet discovered, are sufficient for the effecting of a perpetual motion, though these kind of qualities seem most conducible unto it; and perhaps, hereafter, it may be contrived from them."

No. 12 illustrates the most recent patent granted in the United States for a Perpetual Motion machine, of which the following is a specification;

I, Horace Wickham, Jr., of Chicago, county of Cook, in the State of Illinois, have invented a Machine for Motive Power, of which the following is a specification:

PERPETUAL MOTION.

A is the bed or table. B B are the standards for supporting rocking beam F, pivoted at the center to the standards by the ring D and set-screws *b b*. B′ are the standards for supporting the other parts of the machine, consisting of the governor, flywheel, &c. F is the rocking beam, in two parts, F′ and F″, and secured together by the bands E E′ E″. The upper tube, F′, is made straight, and the lower tube, F″, is made in the form of a W, as clearly shown in the drawing. These tubes F′ F″ are connected at their ends, inside of the bands E′ and E″, in such a manner as to allow the ball used to pass from the lower tube to the upper one by means of the hinged inclined runway C and valve C′, and from the upper one to the lower, inside of the band E″, by the opening therein. The inclined runway C is hinged at one end to the upper tube, F′, at the bottom of its opening or exit, inside of the band E′, while the other end rests on the valve C′. This valve C′ has attached on its under side a pin, *c*, which projects down through a hole in the band E′ a sufficient distance, so that when the pin strikes the upper standard, B″, secured to the bed or table, as the rocking beam oscillates, it will raise the valve a short distance above the upper tube, F′. The valve is made to incline toward the opening in the upper tube, so that the ball when raised on the valve will roll into the same by means of the hinged inclined runway C.

H is a ball, which which runs in the tubes F′ and F″. This ball is charged with a necessary amount of quicksilver, for giving more weight to the same, and also for giving a much quicker momentum to the ball. This ball is to be used in the rocking beam for the purpose of unbalancing, and also to exert the pressure of its specific gravity on the same at whatever point or position it may be in, and in so doing it assists in oscillating it.

I is a rod secured to the band I′. which is made adjustable on the rocking beam. To this rod I is attached the upper end of the pitman J, the lower end of the pitman being secured to the crank-shaft K, upon which is mounted the fly-wheel L and gear-wheel M.

The rocking beam F is provided, on the opposite end to which the pitman is attached, with a rod, N, on which is placed an adjustable weight, N′, which is secured at any desired point by means of the set-screw *n*. This weight N′ is for the purpose of counterbalancing the adjustable band provided with the rod I, to which the pitman is attached, and also the pitman.

The governor R is for the purpose of regulating the motion of the machine, and is operated through the medium of the gear-wheel M on the crank-shaft K, which meshes into a pinion, O, on the straight shaft P, which revolves the bevel-wheel S on the same. This bevel-wheel meshes into the bevel-pinion T on the upright shaft of the governor, for revolving the same. This governor is constructed in the usual manner, excepting in using the cut-off valve, as in steam-engines, which is dispensed with, and an automatic brake is used and operated by means of the rise and fall of the governor-balls.

The automatic brake consists of an elastic band, V, one end of which passes up through a hole in the guide-rod V′, projecting from the standard that supports the governor, and is connected to an arm, *w*, projecting toward and partly around the upright shaft of the governor. The tension of said band is regulated by nuts and screw-thread on the end of said band. The other end of said band passes under a wheel, S, on the shaft P, and is secured to a projecting arm, *w′*, on the standard that supports the governor.

The crank-shaft K is counterbalanced by a projecting weight, K′.

I do not wish to confine myself to the precise construction of the rocking beam as shown and described, as I intend in using in lieu thereof wires or rods, arranged in the form and shape of the rocking beam described, with mounted weights arranged to roll on them, which, in connection with the other parts of the machine, will accomplish the same result.

The lower tube, F″, can be made semicircular in form and shape, instead of the form and shape of a W. Any number of rocking beams may be used, and more than one ball can be used in the rocking beam by having inclined runways and valves on each end of said beam, the rocking beam so arranged that the balls drop from one tube to the other at the center of the beam, and rolling alternately from the center to the ends of the beam.

In the library of the British Museum is an edition of "A very necessarie & profitable booke, concerning Navigation, compiled in Latin by Joannes Taisnierus, public professor in Rome, Ferraria, and other universaties in Italie of the Mathmaticalles, named a Treatise of Continuall Motions; translated into English by Richard Eden." It is a black letter quarto tract, printed by Richard Jugge, without date, consisting of eighty-two pages. The first part is "Of the Vertue of the Loadstone," and the second part is "Of continual motion by the said stone Magnes." It was reprinted in 1579.

In his introductory remarks, he observes, in allusion to continual motion, that it is—

"The thing which is this day in manner from the beginning of the world, great philosophers with perpetual studie and great labour, have endeavoured to bring to effect, and desired end, hath neverthelesse hitherto remayned eyther unknown or hydde, not without great damage & hyndrance of most expert mathematicians. . . .

"From the begynnyng of the worlde, in manner all naturall philosophers and mathmaticians, with great expences and labour, have attempted to fynde out a continual motion or moovyng; yet unto this day have few or none atteyned to the true ende of their desyre. They have attempted to doo this with divers instruments & wheeles, & with quicksylver, not knowyng the virtue of this stone. Neyther can continual motion be founde by anye other meanes, than by the stone Magnes, in this manner. Make a hollowe case of sylver, after the fashion of a concave glasse, outwardly laboured with curious art of gravyng, not onely for ornament, but also for lyghtnesse; the lyghter that it is, so much the more eassyer shal it be mooved, neyther must it be so pearced through, that such as are ignorant of the hyd secrete, may easyly perceyve it. . . ,

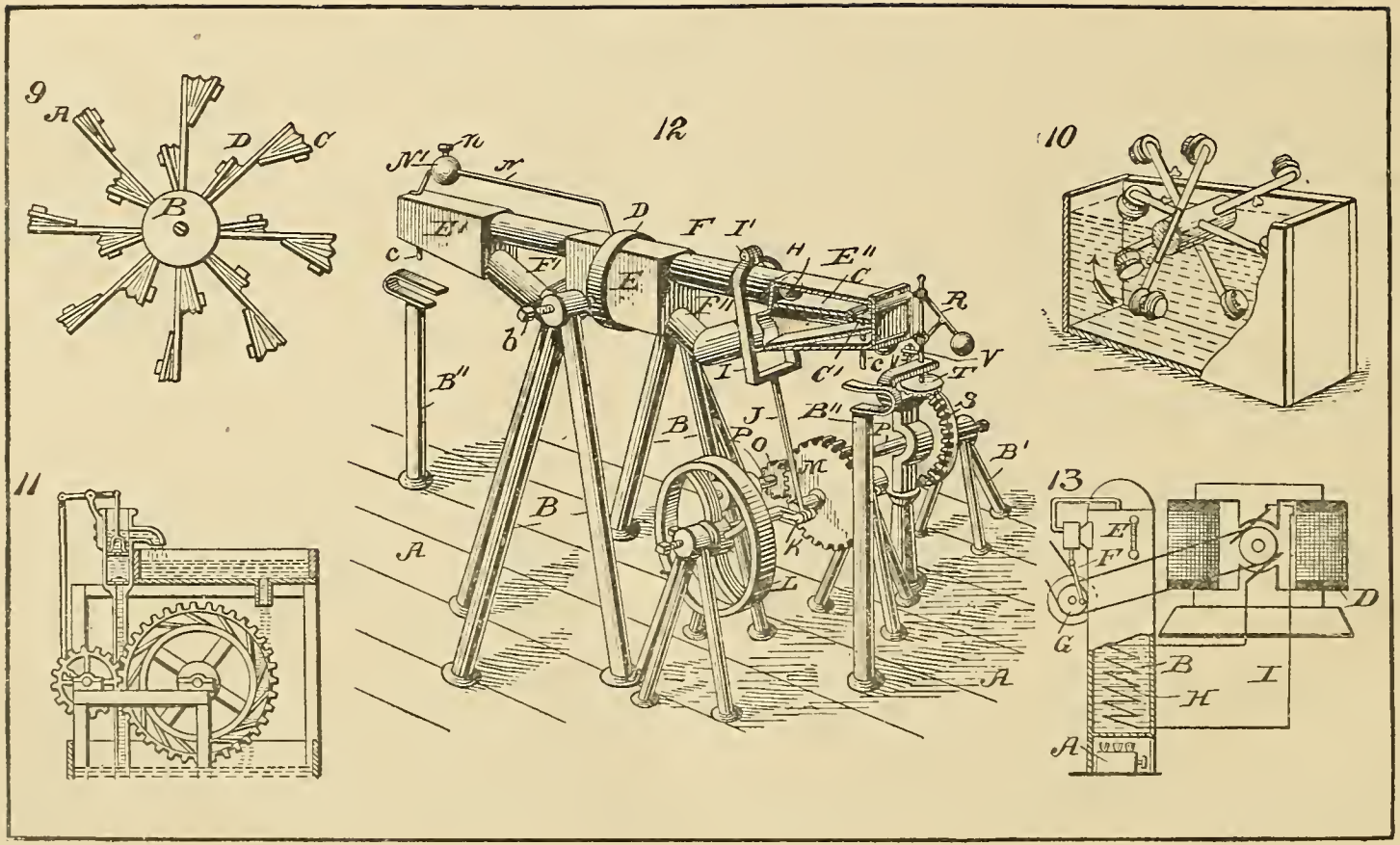
"It must have on the inner syde certayn little nayles & denticles or small teeth of iron of one equal weyght, to be fastened on the border or margent, so the one be no further distant from the other, than is the thyckness of a beane or chick pease. The sayd wheele also must be in all partes of equal weyghy, then fasten the exiltree in the myddest, upon the whiche the wheele may turne, the exiltree remayning utterly immoveable. To the whiche exiltree agayne shal be joyned a pynne of sylver, fastened to the same, & placed betweene the two cases in the hyghest parte, whereon place the stone Magnes. Beyng brought to a rounde fourme, then (as is sayd) let the poles be founde: then the poles untouched, the two contrarye sydes lying betweene the poles, must be fyled & pullyshed, & and the stone brought in manner to the fourme of an egge, & somewhat narrower in those two sydes, lest the lower parte

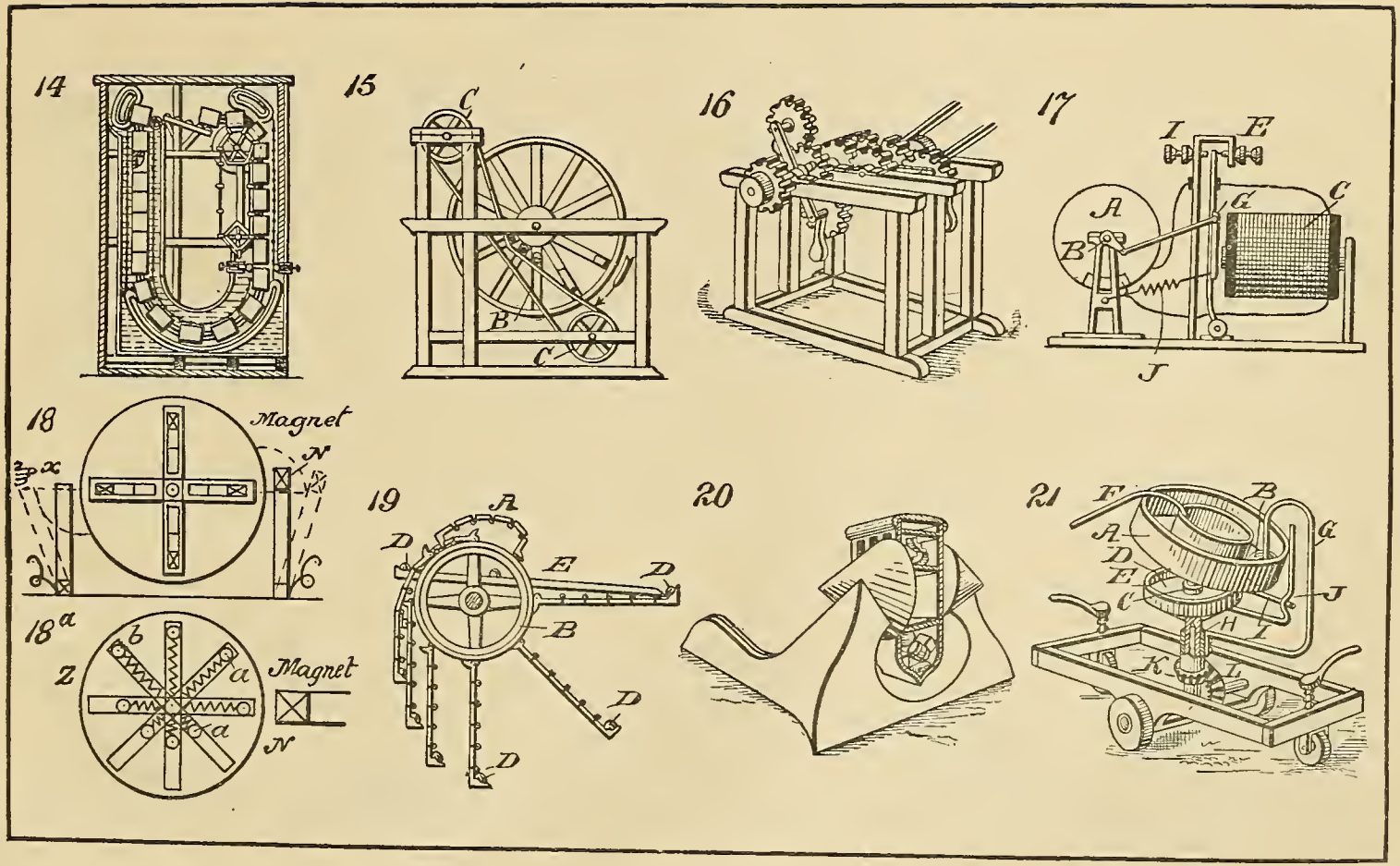
thereof shoulde occupie the inferior place, that it may toucee the walles of the case lyke a little wheele. This done. place the stone upon the pynne, as a stone is fastened in a ryng, with such art, that the north pole may a little inclyne toward the denticles, to the ende that the virtue thereof woorke not directly his impression, but with a certayne inclination geve his influence upon the denticles of iron. Every denticle therefore shall come to the north pole, & when by force of the wheele it shal somewhat pass that pole, it shal come to the south part, wheele shal drive it back agayne; whom then agayne the pole artlike shall drawe as appeareth. And that the wheele may the sooner doo his office within the cases, inclosed therein a litle calculus (that is) a litle round stone or pillet of copper or sylver, of suche quantitie, that it may commodiously be receyved within any of the denticles: then when the wheele shal be raysed up, the pellet or rounde weyght shal fal on the contrary parte. And whereas the the motion of the wheele downwarde to the lowest part, is perpetuall, & the fal of the pellet, opposite or contrary, ever receyved within any two of the denticles, the motion shall be perpetuall, because the weyght of the wheele & pellet ever enclyneth to the centre of the earth & lowest place. Therefore when it shal permit the denticles to rest above the stone, then shal it well serve to the purpose. The myddle places within thr denticles ought so artificially to be made belowe, that they may aptly receive the fallyng pellet or plommet. as the fygure above declareth. And briefly to have wrytten thus much of continual motion may suffice.

"Description of the Engraving, Fig. 3.—A, the stone; B, the sylver pinne; E, calculus, a liltle rounde stone small weyght."

No. 7 illustrates another form of gravity wheel having ball receiving pockets and means for elevating the balls from the bottom part of the wheel. This method is an effort too, often repeated, to keep the center of gravity always at one side of the wheel axis while revolving. The balls as they pass from wheel at bottom roll into an elevator or carrier which dumps them at the top on the way *a*, from which they roll back into wheel-pocket. This form was the invention of Conradus Schweirs a doctor of divinity, and patented by him in 1790.

Illustration No. 13 shows a form of Electric Perpetual Motion, often repeated in various ways. A B indicates boiler, E, engine, F, crank disk, G, power transmitting wheel, D, dynamo, belted with wheel G H, electric heater coil in boiler, I, electric heater circuit, and A, a bunson or other burner. The idea is to generate steam in the boiler sufficient to operate the dynamo, after which the dynamo generating current in circuit, energizes heat coil H. and maintains steam generation within boiler, without use of burner A. This form of motor is one advanced by many amateur electricians.


9
A
B
C
D
12
N'
n
N
E'
F'
E
D
F
I'
H
E''
C
F''
R
V
T
C'
I
B''
B
J
P
O
M
K
L
S
B'
A
c
b
10
11
13
E
F
G
D
B
H
I
A


14
15
C
B
C
16
17
I
E
A
G
C
B
J
18
Magnet
N
x
18a
b
Z
a
a
Magnet
N
19
A
D
E
D
B
D
D
20
21
F
B
A
G
D
E
C
J
H
I
K
L

PERPETUAL MOTION.

Again is attention called to the interest given this matter by learned men.

A member of Parliament Sir William Congrove, inventor of the famous Congrove rocket was a believer in and invented a perpetual motion illustrated by No. 4, in which the point of capillary is involved. A A A. are their rollers over which passes an endless band of sponges. On the outside of wheel is fitted an endless chain of weights, the two moving together; all parts of the sponge-band and chain being of such accurate uniform weight that the perpendicular side will, in all portions of the band and chain, be in balance with the hypothenuse, on the principle of an incline plane. Now, if the frame having the rollers be placed in water with the lower part immersed, then. if the weight and quantity of the endless chain, be duly proportioned to the thickness and breadth of the sponge-band, said band and chain will, on the water being brought to a proper level, begin to move round the rollers in the direction indicated by arrow, by force of capillary attraction and continue to so move.

In the vertical side of band the sponges are not compressed, and as the pores are open the sponge X absorbs the water and hence the water at that point rises above its level and creates a load on the vertical or down going side overbalancing the dry or compressed side Y, it being assumed that the equilibrium of the chain at the outer side be not disturbed.

The fallicy of this motion is apparent when it is known that the moment the chain weights move downward to to compress the ascending filled sponges to squeeze out the water therein, the equlibrium of the chain is disturbed and changed sufficient to counterbalance the plus weight accrued in the water side by fluid absorption.

No. 14, illustrates the invention of one Jean Clunet, a Frenchman, who patented the same in England in 1869.

Illustration No. 9, represents Bernard Lang's Machine, published in "La Nature" many years ago, and was one of the forms explained under the resolution passed in the Academie des Sciences of France 1775. by which it as resolved it would not examine any further Perpetual Motion Machines, and thought it its duty to explain the fallacy of Perpetual Motion. The Lang Motor is best explained as follows:

"Let there be a wheel, each of whose radii, A B, contains a small channel through which there is a communication between the two bellows, C D, one of which, C, is at the extremity of the radius, and the other, D, is near the center. The external side of these bellows is loaded with a weight. This granted, it will be seen that on one side

(C, for example) the bellows farthest from the center will open. and those nearest must close. A liquid having been poured into each radius in sufficient quantity to fill its channel and one of the bellows, it is evident that on the side, C, such liquor will be at the extremity, that is to say, in the bellows that are open, while on the other side it will be in the bellows that arenear the center. Consequently one-half the wheel will be heavier than the other, and so the wheel itself ought to have perpetual motion.

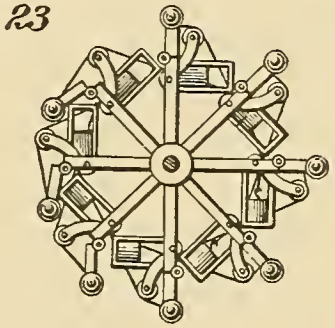
It would be quite difficult to show wherein this reasoning is at fault; but whoever knows the true principles of mechanics will not hesitate to wager one hundred to one such a machine, having been made, will not run."

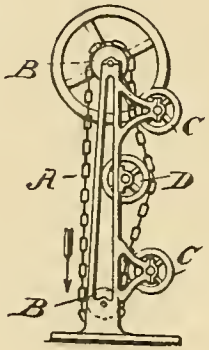
No. 15 illustrates another illusive form of weight motor, and represents a wheel with hollow spokes, in each of which is a weighted ball. A belt B, passes over two pulleys C. There is an opening around the wheel from nave to the circumference to permit the belt to pass freely and to meet the weights. The weights are met by the belt as the wheel revolves, and are raised from the circumference until they are at last brought close to the nave where they remain till by the revolution of the wheel, they are allowed to roll through the wheel circumference. By this arrangement the weights are always at one side of the wheel which causes the wheel (presumably) to continually revolve, see arrow.

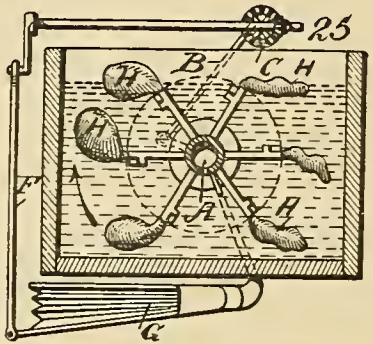
No. 11 is the old standby, which catches the thought of the novice more frequently than any other form, and is so old an idea that the date of its origin is "out of date." The operation of this motor is so plain (on paper) that further comment thereon is deemed unnecessary.

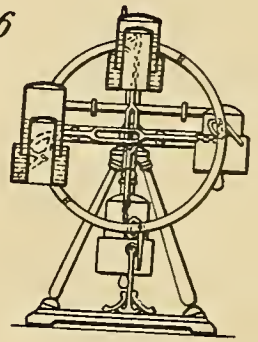
No. 20 represents a self moving railway carriage, which is supposed to consist of a series of inclined planes arranged in such manner that a cone will ascend one side wall and when raised over the summit will descend on the other side wall and continue to so alternately rise and fall. The idea is the more the carriage is loaded the greater will be its speed. This form of carriage invented early in the 19th century only needed a path encircling the earth to permit its continuing on its course, until it should "fall off the earth."

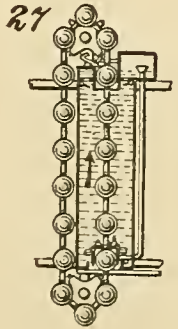
No. 24 illustrates another attempt to make wheels retain an eccess of weights at one side by their center wheel re-volving, and this form includes an endless chain A, passing over end pulleys B, over idler pulleys D, and another idler pulley C. The idea is that the increased weight on the chain on the down going side will more than over balance the weight on the other side and the additional friction by reason of passing over idlers C and D.

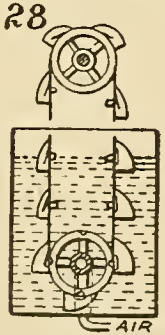

23

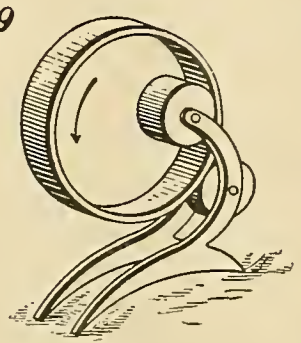

24
B
C
A
D
C
B

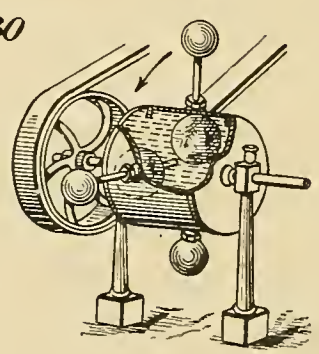

25
B
C
H
H
H
A
H
F
G

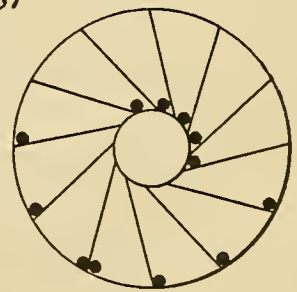

26


27


28
AIR


29


30


31

PERPETUAL MOTION.

No. 17 is an electrical self-moving device, which is supposed to operate as follows :

The frictional electric machine A is started by any means, which magnetizes the magnet C and draws armature G to it. This breaks circuit at I E which demagnetizes the magnet, C and permits spring J to again shift armature G to close the circuit, which allows magnet C to again draw the armature G over as soon as the crank B passes its dead centre, which operation is repeated perpetually (supposedly).

No. 10 illustrates another form of self-mover, in which the buoyancy of one side is intended to lighten the ascending weight elevated by the weight on the opposite or downgoing side.

No. 23 illustrates a machine devised by a celebrated astronomer, James Ferguson. about 1770, the purpose of which was to show the fallacy of Perpetual Motion Machines.

Nos. 18 and 19 illustrates types disclosed by the sketches in W. Stephen's Book, 1799, on No. 18 of which he states. "The repulsion is twice through N, in the same time that it ceases at X," this obscure noting is surpassed in his reference to type 19. "Magnets at the end of spiral springs," intended no doubt to convey that, the magnet N attracts the weights *a* as they are partially being wound out by centrifugal force at Z, and in consequence constantly change points of gravity to magnet side of axis, and cause continuous rotation of wheel.

Illustration No. 6 represents another form of shifting weight motor which the inventor said will not go, though he worked at it a year, and gave up in despair. This machine has central weights A, each weighing one-fourth more than the weights B, at the extremities of the arms. Each pair of weights, A and B are connected by a lever, link, and a bell crank C.

The action of gravity in the central weights causes the sliding weights at the ends of the arms to assume the positions shown in the engraving.

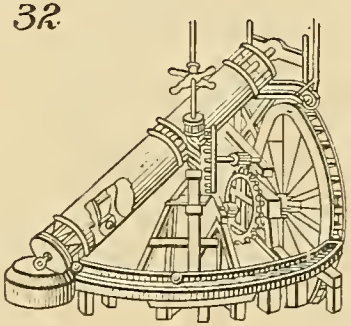
Had the inventor made proper inquiry as to the truth and falsity of his device, he might have found that the principle involved was worked on many years ago, and he might also have found that the lever device in perfect balance and thus saved himself needless worry and expense.

No. 19 shows another form of shifting weights invented by Mr. Geo. Linton, an Englishman :

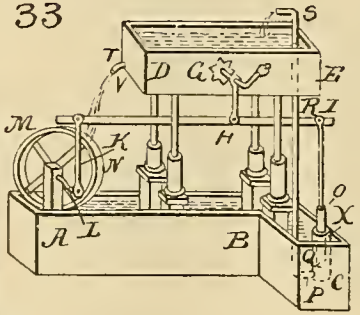
A series of levers, A formed of sections having rule joints all pivotally secured to the periphery of wheel B.

The outer end of each lever has a bucket or holder sufficiently large to receive a ball or weight D. The balls are so carried by the jointed lever as to discharge laterally on the upgoing side on to a guide, E on which they roll down to the extremity of the fully extended arm on the downgoing side.

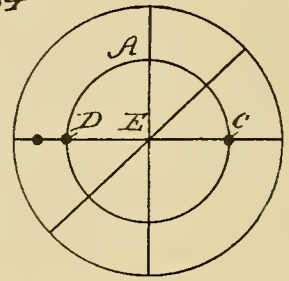
32



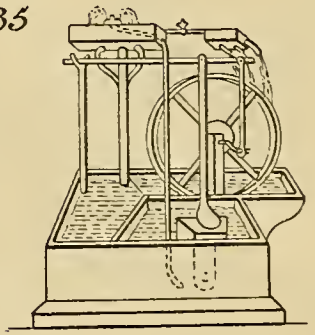
33



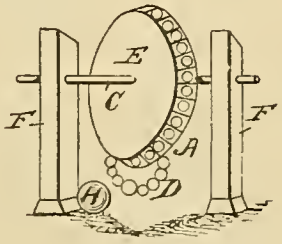
34



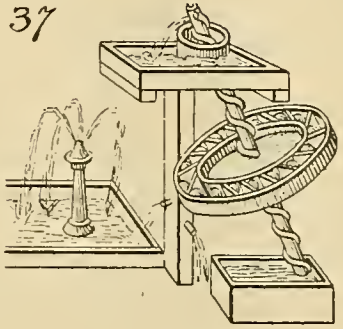
35



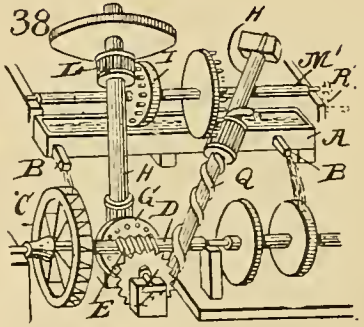
36



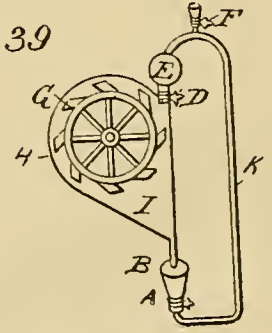
37



38



39



PERPETUAL MOTION.

No. 25 illustrates another form of air and fluid operated motor, in which, (within a cistern of water) is held a radial arm frame, the members of which are hollow and communicate with the hollow axle having an opening A. The wheel hub at one end has a crank, which, through rod B, connects with drive gear C, which operates the pitman F, connected to the bellows G, the nozzle of which discharges on the hollow axle. On one end of each radial arm is fiitted a bladder H. The device is supposed to operate as follows.

The bladder wheel starts the hollow arms, which, passing in a direction of the arrow, are successively brought into communication with the opening A, on the axle and the bladder on the ends thereby inflated. The said bladders when they pass up out of the fluid engage certain valve devices which lets the air out of them. One side thus being made lighter by the inflation of the bladder and by reason of the consequent increased weight on the down-going side, momentum is given to the gear which operates the bellows to keep up the supply of air for the bladders.

This form of motor looks very feasible, and in the hands of a good promoter, the average man can be made to "see it work." The "promoter" is, however, an absolute essential or else you can't "see it."

No. 26 illustrates a form of motor involving the principle of hydrostatics, and reasons advanced for the operativeness of this form of motor was that any body, specifically or bulk for bulk lighter than atmospheric air will rise and flow therein, consequently, if a certain quantity of vessels are attached at equi-distance around the rim of the wheel so arranged that one-half of the vessels shall be exhausted on one side of the wheel and the other half filled with air on the opposite side, the exhausted vessel will attain the highest part of the wheel and the full ones the lowest, thereby providing a constant overbalance of the wheel at one side of its center (presumably).

No. 27 again illustrates a scheme invented by one Herman Leonhardt of St. Gall, Switzerland.

The floats as they enter the fluid in the tank are supposed to render that side more buoyant and as usual constantly shift excess of weight to the outside of the tank. He also provides special means for preventing egress of fluid from tank as the floats enter therein.

No. 28 illustrates a modification of the form shown in No. 27.

No. 29. The large wheel, by force of gravity, is supposed to move constantly in the direction of the arrow between the idler pulleys.

No. 30 illustrates another fallacy supposed to operate by the shifting of cork floats on two rods passed transversely at right angles through a rotary fluid holder. In this form, as in all others in which float devices are employed, the decrease of weight caused on one side by the supposed increase of bouyancy on the other side is counter balanced by the displacement of the fluid by the floats and the increased weight of water in the spaces between the floats.

No. 31 represents the wheel of Orfyreus at Hesse Cassel, Germany, much talked about the year 1720, and which was, probably, made to revolve during the time of exhibition by some concealed apparatus. It consists of a number of cells or partitions distinguished by the letters of the alphabet which are made between the interior and exterior surfaces of two concentric cylinders, the partitions being placed obliquely with respect to the radius, a cylindrical or spherical weight placed on each. It is seen by the figure that these weights will lie against the inner surfaces of the large cylinder whenever the outer end of the bottom partition of any cell is lowest; and, on the contrary, when that extremity is highest the weight will rest on the surface of the interior cylinder.

No. 32 represents an artificial machine for constant motion; invented by Col. Kranach, who, in a book printed at Hamburgh, Germany, asserts, that when once put in motion for any of the following works, it will continue its operation both night and day without any other help or assistance except that of a small quantity of standing water; that by it large and heavy weights may be drawn up, to 2,000 weight; that in twenty-four hours it will fling out 2,400 barrels of water, and is therefore highly necessary for the draining of land overflown by inundations; that it may be employed instead of wind or water mills, for all manner of uses, and that the machine may be put in either a quick or slow motion.

No. 33 shows P. V. Stansel's pump, in the nature of a wheel acting pump. A B C is a large cistern of water. above which is another cistern D E, which is supplied from the lower cistern by the pump X, operated by the water wheel M N, the crank L, of which is attached by a rod K, to the horizontal beam H I K, which swings at H. from the side of the upper cistern, as shown at P G H, the force-pump X on the depression of the plunger O, causes the water to rise up the vertical pipe P Q R S, and thence discharge itself into the cistern D. from which a small portion is allowed to escape through the short pipe T V, whence it falls on the water wheel, and so on continuously.

No. 35 illustrates a hydraulic machine the object of which is to elevate water by means of a force pump operated by water wheel. We here see the raised water flowing abovt like a fountain, while the surplus water falls on the water wheel.

PERPETUAL MOTION.

No. 34 relates to a device disclosed by I. P. Kircher. Let there be a wheel A, in which are two weights C and D of any kind, lead or stone, or in the form of vessels and filled with water or some other fluid; this wheel should move around the centre E with a motion either temporary or perpetual; and the wheel might be moved not by any exterior agent but by the weight themselves. It is manifest from the property of beams and balances, that if the two weights C and D are equal and depend from equal beams or arms of the balance, there will be no motion to and fro, for neither preponderates; therefore if the wheel or arms of the balance C D, are to move to and fro for any space of time, some force requires to be added; and to move perpetually in a circle they must be impelled by this suspended force. And the reason of the first is that it is natural for both weights to gravitate equally in the center of the wheel or its fulcrum E.

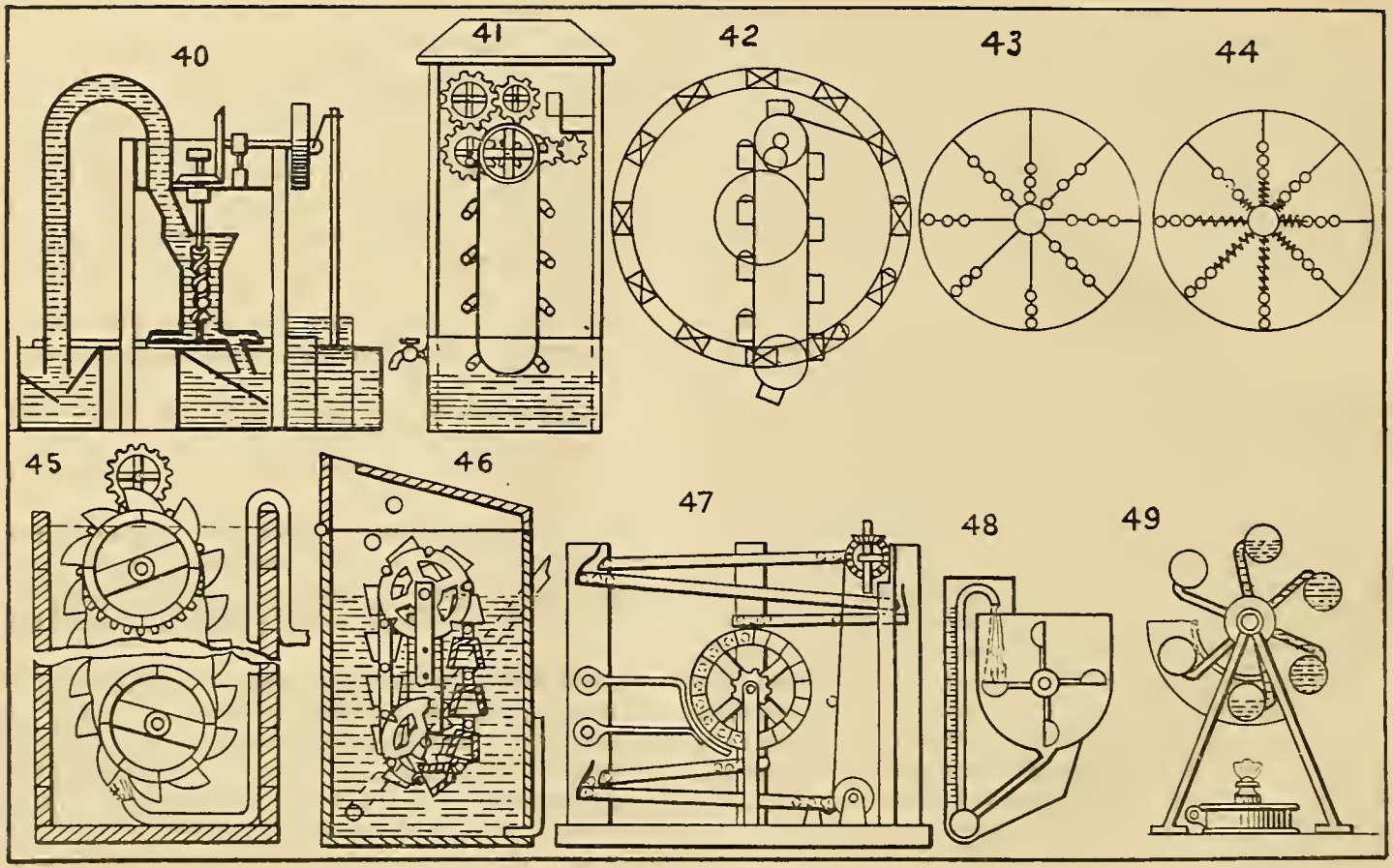
No. 36 illustrates Dr. Jacob's Magnetical invention, consisting of a string of iron balls A, suspended on a grooved wheel E on an axle C, between two uprights F F. H indicates a large loadstone which is to attract the balls at D, and so cause the balls to rotate.

No. 37 illustrates a water screw, the purpose of which is not quite so obvious as to be understood at first view. The inventor, however, intended it for a perpetual motion.

No. 38 illustrates another "water screw" having a grindstone for cutlery, etc. This machine is also intended for perpetual motion.

The water is discharged from the reservoir A, by the sluce B, on the water wheel C, which turns the open screw cylinder D, by means of a toothed wheel E, the cog wheel F, the spoke wheel G, together with the cylinder H and the spoke wheel I, meshing with a small cog wheel L, together with the cylinder M, and the handle R, turns the small spoke wheel of the screw cylinder H, and the screw cylinder itself, and thus draw up again the water discharged from the reservoir A, through the spiral screw Q.

No. 39 illustrates another ancient form of perpetual motion, in which A indicates a cup nearly full of mercury and B the height the mercury will rise by its own weight in the main pipe K, when the lower cock is open. E a hollow globe which must be capable of a greater quantity than the whole pipe K; F the upper cock by which the mercury is filled into the engine and about 27″ higher than the line B; D the middle cock, which, when open lets the mercury fall upon the buckets of the wheel G, and then passes down a funnel I. which contracts itself into a pipe which directs the mercury into the cup A; H a case which entirely covers the wheel (being of the same metal, and of a piece with the pipe), through which the axis of the wheel passes, to set another wheel going; so becoming the principal mover in the clock or engine to be operated.


40
41
42
43
44
45
46
47
48
49

PERPETUAL MOTION.

No. 40 illustrates the invention of a German by the name of Paul Toth. who published in a German paper in December 1857, an account of his patent water-power. which patent was granted him in September previous. He defines the motion as requiring parts that cannot last eternally, but having the property to move eternally. He provides a turbine in a vacuum, by means of which a perpetual waterfall is rendered possible by this machine, that drives a turbine in the vacuum and thus lower again by means of a wheel on its axis, acts on a pump which raises the escaped water up again to the reservoir.

No. 41 illustrates a patent granted to one Henry A. Bonneville and which is described as "an Improved Machine constructed on Self-Moving Principles for Obtaining Motive Power," and the invention consists in a hydraulic self-moving apparatus producing a useful force by means of the simple weight of water.

No. 42 illustrates one of Orfyreus' ideas, the great Professor of Mathematics. This was published in November 1717, in a publication called the "News of the curious and wonderful trial of the Orfyreus wheel at the Castle of Wessenstein near Bassel, which was supposed to have run from November 1717 to January 1718,—eight weeks in all, shut up in an apartment and sealed by the Landgraf in his castle, and which on being opened satisfied him of the truth of perpetual motion. and $10.000 was offered to any one executing a similar work. The diameter of the wheel was 12 feet and only ½ foot thicker than the Merseburg machine; the axle was 6 feet long and 8 inches thick; the frame of solid oak. and on each side had a pendulum fixed. which equally regulated the movement. It is stated it raised a very heavy box full of stones by means of a pulley, without any visible outward means of effecting the the motion. This invention is considered a true perpetual motion as advertised by the Landgraf in his certificate dated the 27th day of May 1718, and it is believed to be a self-turning wheel. which would last as long as the material would last.

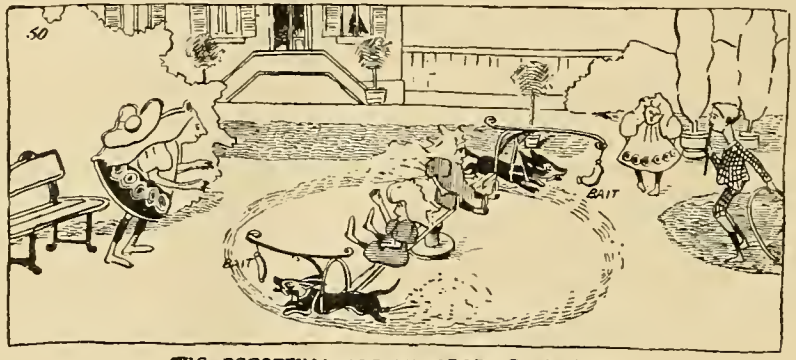
No. 43 indicates another form of wheel with constantly changing weights in which a series of an equal number of slidable balls are fitted on radial spokes. which by centrifugal action are constantly thrown to change the center of gravity.

No. 44 illustrates another form of such wheel which has the balls like the one shown in illustration 43. with the exception that to assist in drawing the balls outward instantly as they reach their upper positions, the said balls are made to abut the yielding bearings adjacent the hub of the end of coil springs.

PERPETUAL MOTION.

No. 45 illustrates U. S. Patent No. 98,946. No. 46 illustrates U. S. Patent No. 29,149. No. 47 illustrates U. S. Patent No. 133,139. No. 48 illustrates another form of thermometer, in which the mercury is supposed to drip as it constantly flows to its highest point by the rise of temperature. No. 49 illustrates another form of motor, which, it cannot be absolutely termed a perpetual motion, it is so much related thereto that it is illustrated and it represents U. S. Patent No. 242,454.

No. 50 explains itself.



THE PERPETUAL-MOTION MERRY-GO-ROUND.

CONCLUSION.

To those who still occupy themselves with this fallacious idea, it is deemed proper to repeat, no perpetual motion, that is a machine capable of moving itself and others not self-movers, or in other words, a self-moving machine capable of transmitting power, has, up to the present time, been produced.

Those who have studied, experimented, and produced various forms of such motion have found nothing but embarrassment and failure. The would-be solver should carefully study what has been presented and remember that minds both scientific and otherwise have followed this "phantom" for centuries and although such phantom appears to be active enough to have sufficient motion to keep beyond the reach of man's ingenuity and thereby in fact remain, as it were, a "perpetual motion," it always manages to keep ahead of those who are trying to catch it.

SUMMARY OF CONTENTS.

A Word of Warning and Advice..... 83
A Word with You..... 4-5
Assignments..... 9
Alternate Screw Mechanisms, Cam and Link Motions, etc..... 37
Abandonment..... 16
Attorney's Charges..... 101-102-103
Be Careful..... 77
Brake Mechanisms, Link Chains, Roller Mills, etc..... 36
Brake Mechanisms, Cam Devices, etc..... 38
Bicycle Movements..... 45-50-55
Bicycle Gearing..... 51
Bicycle Brakes, etc..... 56
Caveat..... 10
Composition of Matter..... 8
Collapsible Frames, Compound Gearing, etc..... 45
Conception of Invention..... 16
Clutch Devices, Gearing, Drill Motions, etc..... 34
Clutch Mechanisms, Cam Motions, etc..... 35
Crank and Lever Movements..... 48
Copy-Rights..... 12
Cash Register Movements..... 54-59
Decisions of the Supreme Court and the Commissioners of Patents..... 90-100
Drive Gearing, Link and Crank Motions..... 33
Dieterich's 50 Perpetual Motions..... 108-128
Designs..... 12
Disclaimers..... 11

CONTENTS.

Fees, Price of Publication in the U. S. Patent Office. Atterneys' Fees 138
Field of Invention..... 21
Flexible Joints. Toggle Joints, etc..... 43
Foreign Patents..... 62
Foreign Patents
Canada 64
Foreign Patents
Belgium.....
Austria .....
France.....
Canada Applications..... 65
Foreign Patents
England, Germany..... 66-67
Foreign Patents
France 68
Foreign Patents
Belgium..... 69
Forms of Assignment
Agreement to Assign..... 104
Assignment before Patent..... 105
Assignment after Patent,.. 106
Gear Mechanisms..... 24-30
Governor Mechanisms, Pulley Blocks, Bearing Devices, etc..... 40
How to Select an Attorney..... 71
How to Secure an Attorney..... 74-75
How to Sell a Patent..... 80

CONTENTS.

How to Proceed to Sell a Patent 84
How to Obtain a Patent 16
How to Proceed with Simple Inventions 86
Interference 17
Idle Moments 78
Journal Bearings, Hydraulic Ram, Joints, etc 42-47
Lever and Cam Mechanisms 31
Labels 11
Marking Patented Articles 10
600 Mechanical Movements 23
Models 8
Mills, Chains, Brakes, etc 41
Mangle Racks 42-43
Mooring Anchors 45
Model Hall of U. S. Patent Office 61
No Patent No Pay Plan 102
Oath 6
Patents 7
Patent Solicitors 72-73
Patent Right Securer 76
Patent Office Lobby 79
Patent Right Selling Agents 81-83
Pulleys and Holders 42-43-45
Patent Drawings 87-88
Rei-ssues 11
Rotary Engines 41-49

CONTENTS.

Title 1
Trade-Marks 12
The Application for a Patent in the Patent Office 14
The Field of Invention 20
Typewriter Movements 52-57-58
Time in which to Make a Foreign Application 63
A Person of Inventive Genius 18
U. S. Patent Office 6
U. S. Capitol 22
U. S. Congressional Library 70
U. S. State, War and Navy Department 107
Velocipede and Bicycle Movements 53
What is Required to Obtain a Patent 7
What is Patentable 15
What is not Patentable 15
When to Apply for a Patent 15
What Will a Patent Cost 17
Why Patents Pay 18
What to Invent for Profit 19
Wheels 20
Women as Inventors 60
When to Begin to Sell a Patent 85
White House 89
You Will Need an Attorney 77

DEC 28 1906

LIBRARY OF CONGRESS
0 029 985 421 8

600 Mechanical Movements.